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### ERRATA.

Page	111	line 3: delete the number 1 after yzoa. (The footnote refers to Opercularia nutans
,,	187	foot note, line 3: for "shrimps' nets' d "shrimps' nests."
,,	363	line 22: for Hamilton read Buchanan;
"	368	,, line 32, 369 line 7 from the boutom; 370 line 20; 372
		lines 2 and 14 from the bottom; 378 line 22 and 3 and 4
		from the bottom: for griesbachiana read grisebachiana.
,,	371	,, 15: for Maxim, read Maxim-
,,	372	lines 11 and 8 from the bottom should each be indented to
		contrast with "Inflorescence dense" above.
97	373	line 9 from the bottom: for nomem read nomen; for mudum read nudum.
	374	,, 12 from bottom: for wall. read Wall.
"	375	
23	377	* C
"		
,,,	378	lines 20 and 23: for India read Indiæ.
,,	378	" 28: for Honenacker read Hohenacker.
,,	381	" 12: supply "it" after "collected."
,,	496	,, 19 from bottom: for Marselia Quadrifoliata read Marsilea quadrifolia.

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Regan, C. Tate—Two New Cyprinoid Fishes from the Helmand Basin. Journ. and Proc. As Soc. Beng., Vol. II., No. 1, 1906, pp. 8-9.

- 1. Scaphiodon Macmahoni sp. nov., by Regan, C. Tate, p. 8.
- 2. Nemachilus rhadinæus sp. nov., by Regan, C. Tate, pp. 8-9.

## JANUARY 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 3rd January, 1906, at 6-30 p.m.

The Hon. Mr. JUSTICE ASUTOSH MUKHOPADHYAYA, M.A., D.L., Vice-President, in the chair.

The following members were present:-

Dr N. Annandale, Mr. L. L. Fermor, Babu Amulya Charan Ghosh Vidyābhuṣaṇa, Babu Hemendra Prasad Ghose, Mr. H. H. Haydeu, Mr. T. H. Holland, Mr. J. Macfarlane, Major D. C. Phillott, 23rd Cav. F.F., Major L. Rogers, I.M.S., Pandit Yogeśa Chandra S'āstree.

The minutes of the last meeting were read and confirmed.

Thirty-five presentations were announced.

It was announced that Mr. R. O. Lees, Mr. F. J. Ede, Mr. W. S. Meyer, Mr. J. Bathgate, and Mr. J. Nicoll had expressed a wish to withdraw from the Society.

Mr. T. H. Holland contributed an obituary notice of the late Dr. W. T. Blanford, and announced the steps already taken to put up a bust in his memory.

## W. T. Blanford, A.R.S.M., LL.D., C.I.E., F.R.S.

The publications of this Society more nearly represent Dr. Blanford's scientific activity in India than those of the Department of Government of which he was such a distinguished member. Although officially a geologist, his researches extended over much of the related sciences of geography and zoology, and his work in either branch would have been sufficient to mark his name as a

prominent worker in Natural History.

Dr. Blanford joined the Asiatic Society in 1859, as an Ordinary Member, and was elected an Honorary Member in 1883, the year after his retirement from the Indian service. Although he was one of the most prolific contributors to the *Journal* during his 27 years' service in India, his continual absence from Calcutta prevented his acceptance of office until 1877, when, having returned to Calcutta to revise the Manual of Indian Geology, he was elected Vice-President of the Society, and during the following two years, 1878 and 1879, filled the office of President. His death on the 23rd June 1905, at the age of 73, removed one of the most distinguished of our members.

Dr. Blanford's first formal contribution to the Society was a paper in conjunction with his brother, forming No. 1 of a series on Indian Malacology read at the general meeting on the 7th March 1860, and published in volume XXIX of the Journal. From that time till the Society celebrated its centenary in 1883, nearly every volume of the Journal included one or more papers from Blanford, describing observations made in every province of India, and from beyond the frontier in Persia and Turkistan as well as Abyssinia—a record of 74 papers dealing purely with original work. The Journal of this Society includes but a fraction of Blanford's work in India. His chief work was geological and palæontological, the results being published either in the Records and Memoirs of the Geological Survey of India, or in the journals of European scientific societies. Altogether, whilst still in the Indian service, he published just 150 scientific papers, many of which were comprehensive memoirs, not merely details of observation, but contributions to the philosophical aspects of geology and zoology which have made some of his memoirs classical works in the history of science.

After his retirement in 1882, most of the papers he wrote summed up the observations made during his service of 27 years in India: and, with his summaries, he indicated the philosophical bearing of the accumulated mass of data on current scientific doctrines. Amongst publications of this kind, it is only necessary to refer, firstly, to his address to the British Association at Montreal in 1884, when he demonstrated the truth of Huxley's theory of homotaxis in the descent of isolated faunas and floras, bringing to a close, at the same time, the disputed question as to the age of the coalbearing Gondwana system of Indian rocks; and secondly to his address to the Geological Society of London in 1889, when, with reference to the much-debated question of the permanence of oceanic depressions and continental plateaux, he brought together in his inimitable way a mass of isolated and apparently unrelated data to show that, "not only is there clear proof that some land areas lying within continental limits have, at a comparatively recent date, been submerged over 1,000 fathoms, whilst sea-bottoms now over 1,000 fathoms deep must have been land in part of the Tertiary era, but there are a mass of facts, both geological and biological, in favour of land-connection having formerly existed in certain cases across what are now broad and deep oceans."

Possibly the most conspicuous amongst the productions of his scientific activity was his last—his memoir on "The Distribution of Vertebrate Animals in India, Ceylon and Burma," for which he was awarded one of the two Royal medals granted by the Royal Society in 1901. A considerable section of his time during retirement was occupied by the editorship of the official "Fauna of British India," of which he edited 18 volumes,—one on Mam-

mals and two on Birds being entirely his own work.

Those who were favoured by the inestimable privilege of his friendship will readily agree that Blanford's enormous record of published work was not greater than that which he freely contributed to friends in private correspondence. Amidst his many duties at home, as a prominent official of several scientific societies, he never failed to respond to a question or difficulty presented by the most junior of his successors in the Indian field; no subject appeared to be too small or local to be considered worthy of his earnest attention, and times without number, within the recollection of the writer, by private correspondence he has shown his juniors new lines for profitable research, has pointed out by his unique knowledge of literature and width of experience, the significance of new observations, and has frequently saved his less experienced followers from the pitfalls of hasty deductions drawn from imperfect data in this country, where "a little learning" in Natural History is as dangerous as it is in political and sociological matters.

No reference to Blanford's scientific work would be complete without an allusion to one amongst the many ways in which it has been of economic value to the country to which he devoted his best energies. His geological maps of the coalfields have been, and still are, the guide of colliery managers in Bengal: to their remarkable accuracy has been due the successful opening up of new ground, and the economical planning of works for the development of known deposits in a way which has saved the country many times the cost of his service, and possibly even of the whole Department of Government to which he belonged. And yet there is no prospect of reaching the end of his usefulness: scarcely a month passes without some new illustration of the accuracy of an apparently unimportant line on one of his maps, or of the significance of a seemingly passing thought in his reports on Indian minerals.

Blanford's services to science were naturally recognised in Europe: in 1874 he was elected a Fellow of the Royal Society; in 1881, whilst representing India at the International Geological Congress at Bologna, he was elected a Vice-President of the Congress, and was decorated by the King of Italy with the order of St. Maurice and St. Lazarus. He was also Vice-President of the Congress on three subsequent occasions—Berlin 1885, London 1888, and Paris 1900. On his retirement from the Indian service in 1882, the Geological Society of London conferred on him the highest distinction at their disposal, the Wollaston medal. In 1884 he was elected President of the Geological Section of the British Association at Montreal, and at the same time the McGill University conferred on him the honorary degree of LL.D. He was elected President of the Geological Society of London in 1888, served three times as Vice-President of the Royal Society, and on other occasions as Vice-President of the Zoological and the Royal Geographical Societies. In 1904 the King honoured the Most Eminent Order of the Indian Empire by including Dr. Blanford's name amongst the roll of Companions. T. H. H.

The General Secretary reported that the Council had made the

following appointments: -

1. Pandit Kunja Behari Nyayabhushan, as the Pandit for the Oriental Library of the Society vice Pandit Mahendra Nath

Mukerjee, resigned.

2. Pandit Asutosh Tarkatirtha, as one of the travelling Pandits, and in his place Pandit Mathura Nath Mazundar Kavyatirtha, as the Resident Pandit, attached to the search for Sanskrit Manuscripts.

Mr. J. A. Chapman, proposed by Dr. E. D. Ross, seconded by Mr. J. Macfarlane, was ballotted for and elected an Ordinary Member.

The Adjourned Meeting of the Society was held on Wednesday, the 10th January, 1906, at 9-15 P.M.

The Hon. Mr. JUSTICE ASUTOSH MUKHOPADHYAYA, M.A., D.L., Vice-President, in the chair.

The following members were present:-

Syed Abul Aâs, Mr. C. G. H. Allen, Dr. N. Annandale, Major W. J. Buchanan, I.M.S., Mr. I. H. Burkill, Mr. L. L. Fermor, Babu Amulya Charan Ghosh Vidyabhusana, Mr. W. A. Lee, Dr. M. M. Masoom, Mohamed Hossain Khan Midhut, Major F. P. Maynard, I.M.S., Major D. C. Phillott, 23rd Cav. F.F., Mr. G. E. Pilgrim, Pandit Yogeśa Chandra Sastree, Mahamahopadhyaya Haraprasad Shastri, Mr. E. P. Stebbing, Pandit Rajendra Nath Vidyabhusana, Mahamahopadhyaya Satis Chandra Vidyabhusana, Rev. A. W. Young.

Visitors:— Dr. C. Banks, Syed Chirag Ali, Mr. A. M. Mahfuz, Babu Dwijendra Nath Maitra, Mrs. Maynard, Mr. A. N. Price,

Captain Riddick, Mr. W. Withall, and others.

Major L. Rogers gave a lecture on types of fever in Calcutta (lantern demonstration).

The following papers were read:—

1. Romaka, or the City of Rome, as mentioned in the Ancient Pali and Sanskrit works.—By Манаманораднуача Satis Chandra Vіруавніўнаў, М.А.

2. Two New Cyprinoid Fishes from the Helmand Basin.—By C. TATE REGAN, B.A. Communicated by LIEUT.-Col. A. W. ALCOCK,

C.I.E., F.R.S.

3. The Origin of Mankind (according to the Lamaic Mythology).—By Rai Sarat Chandra Das, Bahadur, C.I.E.

4. Optimism in Ancient Nyaya.—By PANDIT VANAMALI VEDANTA-

TIRTHA.

This paper has been published in the Journal and Proceedings, N.S., Vol. I, No. 10, 1905.

5. Persian Folk Songs.—By Major D. C. Phillott, 23rd Cav., F. F.

This paper will be published in a subsequent issue of the Journal and Proceedings.

# LIBRARY.

The following new books have been added to the Library during January 1906:—

**Abdel Aziz Nazmi.** La Médecine au temps des Pharaons. Thèse, etc., Montpellier, 1903. 8°.

Assam District Gazetteers. Calcutta, 1905, etc. 8°.

Presd. by the Govt. of Eastern Bengal and Assam.

- Baldaeus, Philip. A Description of ye East India Coasts of Malabar and Coromandel, with their adjacent kingdoms and provinces; and of the Empire of Ceylon and of the Idolatry of the Pagans in the East Indies. [With plates.]

  London, 1703. fol.
- Balfour, Edward. The Cyclopædia of India and of Eastern and Southern Asia...Third edition. 3 vols.

  London, 1885. 8°.
- CALCUTTA.—Calcutta Madrasah. Catalogue of the Arabic and Persian Manuscripts...by Kamallu'd-Dîn Aḥmad and 'Abdu 'l-Muqtadir, with an introduction by E. Denison Ross. Calcutta, 1905. 8°.

Presd. by the Gort. of Bengal.

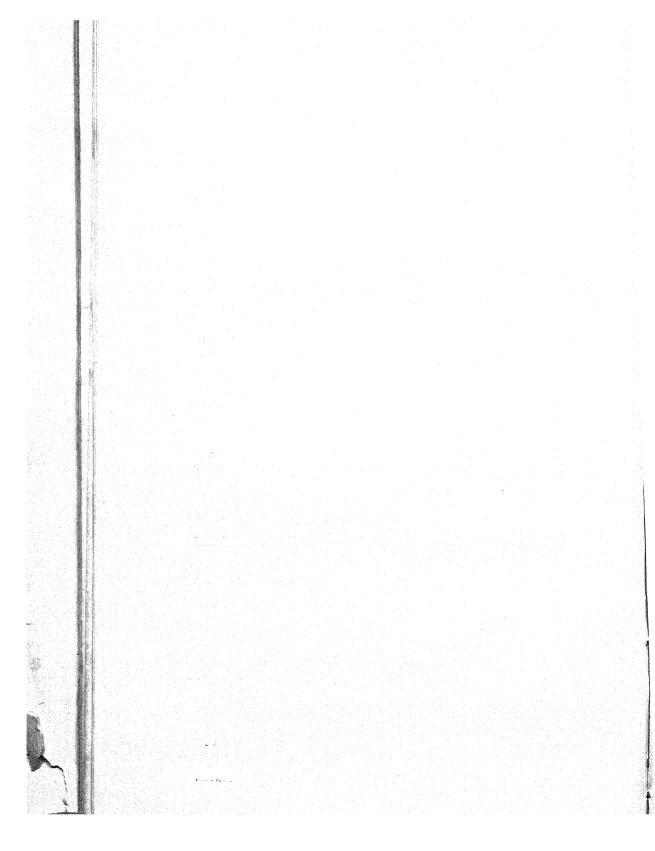
Carnahan, David Hobart. The Prologue in the old French and Provençal Mystery...A thesis, etc. New Haven, 1905. 8°.

Presd. by Yale University.

- Cirkel, Fritz. Asbestos: its occurrence, exploitation and uses. Ottawa, 1905. 8°.
- ——Mica: its occurrence, exploitation and uses. Ottawa, 1905. 8°.

Presd. by the Dept. of the Interior, Mines Branch, Canada.

- Dutt, Romesh. India in the Victorian age: an economic history of the people. London, 1904. 8°.
- Francke, Rev. A. H. First Collection of Tibetan Historical Inscriptions on rock and stone from West Tibet. [In Tibetan.] 1906. 8°.



Francke, Rev. A. H. Log-dag-kaye-Ag-bar. Tibetan Paper. Vol. III. [In Tibetan.] [1906.] 4°.

Presd. by the Author.

- Frey, H. Les Égyptiens préhistoriques identifiés avec esl Annamites d'après les inscriptions hiéroglyphiques. Paris, 1905. 8°.
- Ghamat, K. E. The Present State of India. An appeal to Anglo-Indians. Bambay, 1905. 8°.

Presd. by the Author.

- Giridharajee Mahārāj, Goswāmī Srī. Suddhādvaitamārtanda ...With a commentary called Prakāsa. By Srí Rama Krishna Bhatta. And Prameyaratmarnava. By Srí Balakrishna Bhatta. Edited by Ratna Gopal Bhatta. Benares, 1905. 8°. Chowkhamba Sanskrit Series, No. 97.
- Gonnaud, Pierre. La Colonisation hollandaise à Java, ses antécédents, ses caractères distinctifs. Paris, 1905. 8°.
- Herzog, Maximilian. Further observations on Fibrin Thrombosis in the glomerular and other renal vessels in Bubonic Plague.

  Manila, 1905. 8°.

Bureau of Govt. Luboratories, Manila, No. 33.

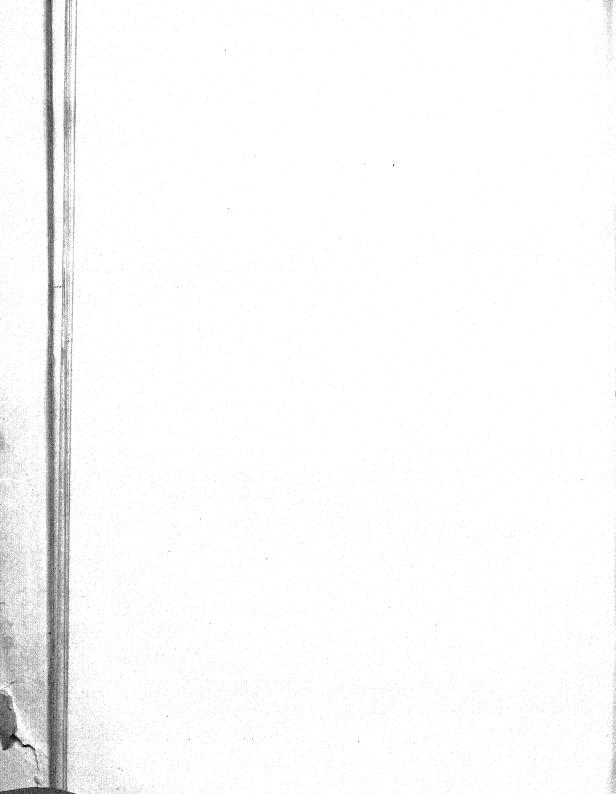
Presd. by the Bureau.

Hill, S. C. Bengal in 1756-1757. A Selection of public and private papers dealing with the affairs of the British in Bengal during the reign of Siraj-uddaula. Edited...by S. C. Hill. 3 vols. London, 1905. 8°.

Part of the Indian Records Series.

Presd. by the Gort. of India, Home Dept.

- HISTORICAL VIEW of plans for the Government of British India, and regulations of trade to the East Indies and outlines of a plan of Foreign Government, of commercial economy, and of domestic administration, for the Asiatic interests of Great Britain. [By J. Bruce.] London, 1793. 4°.
- Irvine, William. The Army of the Indian Moghuls; its organization and administration. London, 1903. 8°.



Kunik, ( ). Analyse d'un ouvrage manuscrit intitulé die Ssabier und der Ssabismus oder die syrischen Heiden und das syrische Heidenthum in Harran und andern Gegenden Mesopotamiens zur zeit des chalifats. Ein Beitrag zur Geschichte des Heidenthums in Vorderasien, grösstentheils nach handschriftlichen Quelen ausgearbeitet von Dr. Joseph Chwolsohn. St. Petersburg, 1852. 8°.

Mélanges Asiatiques tirés du Bulletin Historico-Philologique de l'Académie Impériale des Sciences de St. Pétersbourg.

Tome I.

- Macaulay, Lord. The Works of Lord Macaulay. (History of England. Essays and Biographies. Speeches, poems and miscellaneous writings.) 12 vols. London, 1898. 8°.
- MacCulloch. J. R. A Dictionary, practical, theoretical, and historical of Commerce and Commercial Navigation....New edition....Edited by H. G. Reid. London, 1871. 8°.
- Marshman, John Clark History of India, from the earliest period to the close of Lord Dalhousie's administration. 3 vols. London, 1867. 8°.
- Merrill, Elmer D. I. New or Noteworthy Philippine Plants, III; II. The Source of Manila Elemi. Manila, 1905. 8°.

  Bureau of Govt. Laboratories, Manila, No. 29.

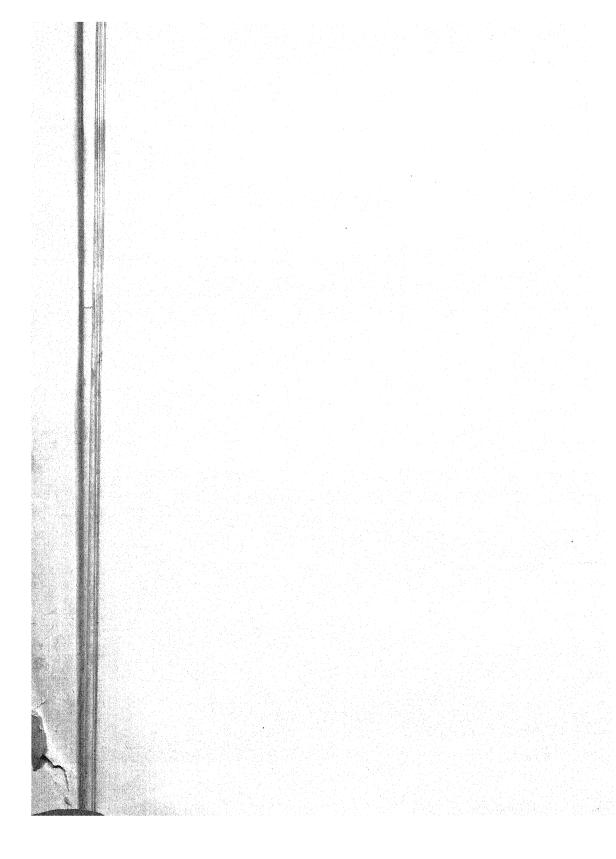
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- Milburn, William. Oriental Commerce; containing a geographical description of the principal places in the East Indies, China and Japan, with their produce, manufactures and trade, etc., 2 vols. London, 1813. 8°.
- Moquette, J. P. Voorloopig verslag over het vinden van rijstkorrels op ketan, en proeven daarover genomen. Batavia, 1905. 8°.

Presd. by the Botanic Institute of Buitenzorg.

- Morgan, J. de. Histoire et travaux de la délégation en Perse du ministère de l'Instruction publique, 1897-1905.

  Paris, 1905. 8°.
- Mulhall, Michael G. Dictionary of Statistics....Fourth edition revised to November 1898. London, 1903. 8°.
- Munk, S. Mélanges de philosophie juive et arabe. *Paris*, 1857-59. 8°.
- Naoroji, Dadabhai. Poverty and Un-British Rule in India. London, 1901. 8.°



Nevill, H. R. Fyzabad. Allahabad, 1905. 8°.

District Gazetteers of the United Provinces of Agra and Oudh.

Vol. XLIII.

Presd. by the Govt. of India, Home Dept.

Philipps, S. Chas. The Use of Wood pulp for Paper-making.
 Calcutta, 1905. 8°.
 Extracted from the Journal of the Society of Arts, Vol. LIII.

Presd. by the Govt. of India, Rev. and Agri. Dept.

- Piriou, Ernest. L'Inde contemporaine et le mouvement national. Paris, 1905. 8°.
- Prain, D. A Sketch of the Life of Francis Hamilton (once Buchanan), some time Superintendent of the Honourable Company's Botanic Garden, Calcutta. Calcutta, 1905. 4°.

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- **Prinsep**, G. A. Remarks on the external commerce and exchanges of Bengal, etc. London, 1823. 8°.
- Rapin de Thoyras. History of England....Translated...by N. Tindal. The second edition. [With engravings.] 2 vols. London, 1737. fol.

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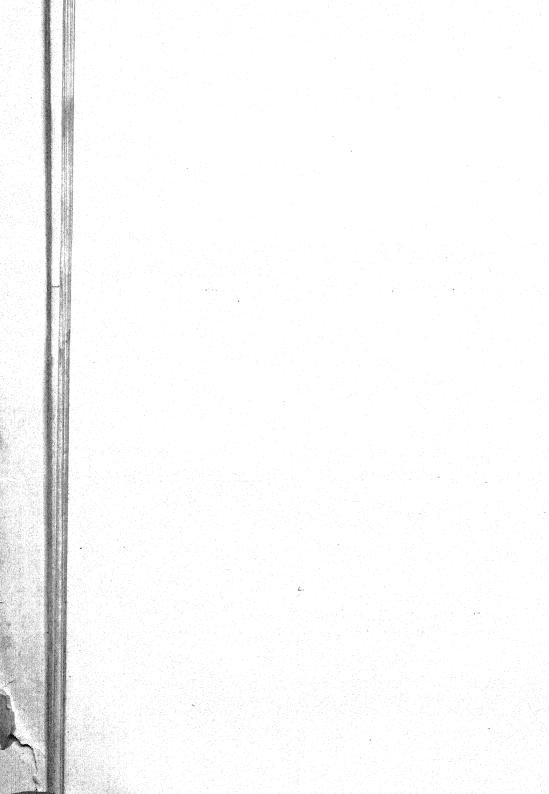
- Raynal, Abbè. A Philosophical and political history of the settlement and trade of the Europeans in the East and West Indies. Translated...by J. Justamond. The second edition, revised, etc. 5 vols. London, 1776. 8°.
- Sahai, Shio Nandan. Life of Harischandra. [With photographs.] [In Hindi.] Bankepur, 1905. 8°.

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- Schmidt, P. W. Grundzüge einer Lautlehre der mon—khmer— Sprachen. Wien, 1905. 4.° Denkschriften der K. Akad. der Wissenschaften in Wien, Philosophisch-Historische klusse, Band LI.
- Smith, J. J. Die Orchideen von Ambon. Batavia, 1905. 8°.

Presd. by the Botanic Institute of Buitenzorg.

Smith, R. Bosworth. Life of Lord Lawrence....With portraits and maps. London, 1883. 8°.



Strong, Richard P. I. Intestinal hemorrhage as a fatal complication in amaebic dysentery and its associations with liver abscess. II. The action of various chemical substances upon cultures of Amœbæ. By J. B. Thomas. III. The pathoology of intestinal amaebiasis. By P. R. Woolley and W. E. Musgrave. Manila, 1905. 8°.

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Sudraka. The Little Clay Cart—Mrcchakațika—a Hindu Drama ...translated...by A. W. Ryder. Cambridge, Mass, 1905. 8°.

Harvard Oriental Series, Vol. IX.

Presd. by Prof. C. R. Lanman.

Suśruta Samhita. सुत्रतंहिता (प्रथमखंख्य) स्त्रत्यानम्। [Suśruta Samhita, Part I. Sūtrasthāna with commentary by Haran Chandra Cakravarti. Edited by Mahamahopadhyaya Chandrakanta Tarkalankara. Calcutta, 1905.] [In Sanskrit.] 8°.

Presd. by Babu Haran Chandra Chakravarti.

Terry, Edward. A Voyage to East India, etc. London, 1655. 8°.

Tripathi, Kanhaiya Lal. Shiksha-Darpana—a manual of education. [In Sanskrit.] Bankipore, 1900. 8°.

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Bureau of Gort. Laboratories, Manila, No. 31.

Presd. by the Bureau.

Wright, Henry Burt. The Campaign of Plataea, -- September, 479 B.C... A thesis, etc., New Haven, 1904 8°.

Presd. by Yale University.

Wytsman, P. Genera Avium. Edited by P. Wytsman. Part I, etc. Brussels, 1905, etc. 4°.



1. Romaka, or the City of Rome, as mentioned in the Ancient Pali and Sanskrit works.—By Mahāmahopādhyāya Satis Chandra Vidyābhūsaņa, M.A.

The intercourse between Rome and India, from the 1st century B.C. to the 5th century A.D., has been a favourite subject of investigation to several scholars of eminence during the last few years. Mr. Robert Sewell, on an examination of a large number of "Roman coins found in India," has concluded that the trade between Rome and India began in the reign of Augustus about 29 B.C., and remained in full force up to the time of Nero, A.D. 68. Then it slightly declined, but revived under the Byzantine emperors, and did not finally disappear until the Goths and Vandals

attacked Rome about A.D. 450.

There seems to have been very little trade between Rome and India in the years preceding the reign of Augustus. Although several Roman coins of the Consulate period have been discovered in the Manikyāla stūpas and in the Hazāra district of the Punjab, but these old coins were very probably brought to India by traders several years after they had been prepared in Rome, for it is almost certain that Rome did not attempt to spread eastwards till the later years of the Consulate. It was in the reign of Augustus that the conquest of Asia by Rome began. The Imperial supremacy of Rome aroused on the part of her wealthy citizens an unrestrained indulgence in eastern luxuries, such as in perfumes, ivory, precious stones, silks, fine muslins, pepper,

spices, etc.

These were largely supplied by the western and south-western parts of India, the chief centre of trade having been Barygaza or Bharoach, near Guzerat. About A.D. 47 the regularity of monsoons in the Indian Ocean was discovered, and the Roman ships began to sail direct to the Malabar coast, and thereby a great impetus was given to Indian commerce. Numerous coins of the time of Augustus and his successors were brought to India from Rome by traders. These coins have been recovered from various places, especially from the western districts of the Deccan. In the districts of Madura and Coimbatore alone, 55 separate discoveries have been made, and 612 gold coins and 1,187 silver coins, besides heaps consisting of five cooly-loads of gold coins and several thousands of silver coins, have been found out. Even in Bengal, at a place called Bāmanaghāti in the district of Singbhum, there have been found coins of the times of Gordian and Constantine. Near Jelālabād there have been found Roman coins of as late a period as the time of Theodosius about A.D. 450. It was about this time that the Goths and Vandals attacked Rome, whose trade with India consequently ceased altogether.

From the numismatic evidences given above, as well as from

<sup>1</sup> Robert Sewell's article on "Roman Coins found in India," published in the Journal of the Royal Asiatic Society of Great Britain and Ireland, October 1904.

the artistic and other evidences, and also from the writings of Strabo, Pliny and others, it is clear that there were intimate relations between Rome and India for nearly five hundred years, i.e., between 29 B.C. and A.D. 450. The art, religion, mythology, philosophy, science, etc., of India during this period were more or less influenced by the culture of Rome. The elements in the art of the Gandhara or Peshwar School have been examined in detail, and the general aspect of the figure sculptures and architectural decorations of that school has been perceived to be distinctly Roman. The designs of the sculptures at Amaravati in Southern India have also been considered of Roman origin. It has even been affirmed that the Kusana copper coins and the Indian coins of the Gupta period were direct imitations of the Roman coins called Aurei. The Roman word denarins in its Sanskrit form dīnāra, signifying a coin, occurs not only in the Indian inscriptions of the early Gupta kings, but also in such classical Sanskrit works as the Rajatarangini of Kalhana and Daśa-Kumara-Carita of Dandí, and even in the earliest known Sanskrit lexicon called Amarakoşa, compiled by Amarasimha, who was one of the nine gems of the court of Vikramaditya at Ujjaini.

Evidences might be multiplied to illustrate the manifold influence exercised by Rome on the ancient civilization of India. Seeing that the Roman influence was once so keenly felt by India, it is no matter of surprise that the name Rome should have been known to the Hindus in the ancient days. In fact, it occurs in several of the very important Sanskrit and Pāli works. The name by which Rome has been designated in ancient Sanskrit and Pāli works is Romaka, which is identical with Roma or Rome, the suffix ka having been euphoniously added to it. The latest authoritative mention of Romaka is to be found in the Siddhānta-śiromoni of the great Hindu astronomer Bhāskarācāryya, who

स्याद रोमके राचिदलं तदेव ॥ १८॥

<sup>&</sup>lt;sup>1</sup> Vincent A. Smith's article on "Græco-Roman Influence on the Civilization of India," in the Journal of the Asiatic Society of Bengal, Part I.,

² दौनारेऽपि च निष्कोऽस्त्री। (Amarakoşa, Nānārthavarga.)
³ लङ्गा-तु-मध्ये यमकोटिरस्याः
प्राक् पश्चिमे रोमकपत्तनं च।
ख्यधन्ततः सिद्धपुरं सुमेतः
सौम्येऽघ याम्ये वड़वानलञ्च॥१०॥
लङ्गापुरेऽकस्य यदोदयः सात्
तदा दिनाद्वें यमकोटिपुर्थ्याम्।
न्यथन्तदा सिद्धपुरेऽन्तकालः

<sup>(</sup>Siddhānta-Siromaņi, Golādhyāya, pp. 253, 259, edited by Bāpudeva Sāstrī, Benares, 1866.)

flourished in Southern India early in the 12th century A.D. Another celebrated astronomer named Varāhamihira, who was a brilliant gem in the court of Vikramāditya at Ujjainī in A.D. 505, and whose works are specially valuable as they contain a very large number of Greek and Latin astronomical terms, mentions Romaka in his well-known works on astronomy and astrology named respectively Pañca-siddhāntikā and Vrhat-samhitā. Romaka is also mentioned in the five famous astronomical works anamed Paitāmaha, Vasistha, Sūryya, Paulisa and Romaka siddāntas, all of which have been reviewed by Varāhamihira in his Pañca-siddāntikā, and some of which were compiled in the 3rd or 2nd century A.D. Brahma-(sphuṭa)-siddhānta, Kāṣyapa-samhitā, etc., also refer to Romaka. Thus examining the astronomical works we can trace the name Romaka as far back as the 2nd century A.D.

1 उदयो यो लङ्कायां सोऽस्तमयः सिवतुरेव सिद्धपुरे। मध्याक्रो यमकोद्यां रोमकविषयेऽर्द्धराचः सः॥ २३॥

(Pañcasiddāntikā, p. 45, edited by Dr. Thibaut and Sudhākara Dvivedī.)

श्वत्यान्त्रदिनेराप्तच्या हो नो दिवागगः। लङ्कायां यमको छां च सिद्धप्रयां च रोमके ॥ २५ ॥ व्यर्डराचोदयो तदिह्नार्ज्ञास्त्रमयो तथा। च्यर्भी एघटिकायुक्तो युग्गगोऽभी प्रितो भवेत् ॥ ३६ ॥ p. 5. कटा हृद्धयसन्धातुः पूर्व्वादिषु निरु च्वाः यमकोटिपुरी लङ्का रोमकाः सिद्धिदाः कमात् ॥ ४ ॥ p. 11.

(Vasistha-siddhanta, edited by Vindhyesvari Prasada Dube, Benares.)

भूटत्तपादे पूर्वस्यां यमकोटीति विश्रुता।
भनाश्ववर्षे नगरी खर्णप्राकारतोरणा॥ ३८॥
याम्यायां भारते वर्षे लङ्का तदन्मद्वाप्ररी।
पश्चिमे केतुमालाख्ये रोमकाख्या प्रकीर्तिता॥ ३६॥
उदक् सिद्वप्ररी नाम कुरुवर्षे प्रकीर्तिता॥
तस्यां सिद्धा महात्मानो निवसन्ति गतव्यथाः॥ ४०॥

(Süryya-siddhānta, Bhūgolādhyāya, pp. 285-86, edited by Hari Sankar, Benares).

युगमन्वन्तरकत्याः कालपरिच्छेदकाः स्मृतावृक्ताः। यसाज्ञ शोमके ते स्मृतिवाच्छो शोमकत्तस्मात्॥ १३॥

(Brahma-siddhanta, Chapter I.)

Not only in the astronomical works, but also in such other works as the great Sanskrit epic Mahābhārata and the Jātaka section of the Pali Pitakas we meet with a prominent mention of Romaka. It is not exactly known when the Mahābhārata and the Jātaka were respectively compiled. The orthodox Hindus look upon the Mahābhārata as a very ancient work, though some scholars have brought down the date of composition of some portions of it to the 1st century A.D. when Romaka or Romans were well known in India. The Pali Jataka is stated to have existed at the time of Asoka, and the Pitakas of which it forms a part are said to have been rehearsed in the 1st Buddhist Council in India in 543 B.C. According to this statement, it would appear that Romaka or Rome was known in India in the 6th century B.C. But this conclusion would appear to some as improbable as there is no other strong evidence to show that Rome was known to the people of India at so early a date. So we may suppose that the Romaka Jataka in which the name Romaka occurs might have been compiled at a considerably late date. In the Mahāvamsa, Chapter XXXIII., we find that the Pali Pitakas which had been learnt by Prince Mahinda, son of Emperor Asoka, for three years, were carried to Ceylon where they were orally perpetuated by priests, and were not reduced to writing until in the reign of Vattagamani about 88 B.C. It is probable that the Romaka Jātaka was interpolated in the Pāli Pitakas in Ceylon nearly one hundred years after the the time of Vattagamani, i.e., in the 1st century A.D. This supposition would be supported by the account of Pliny, according to whom the communication of Rome with Ceylon (Taprobane) began in the reign of Emperor Claudius about A.D. 41. Hence we can fairly presume that the name Romaka was introduced in the Pāli Piṭakas and the Sanskrit Mahābhārata in the 1st century A.D., though it is not altogether improbable that the name had been introduced even much earlier.

I shall now briefly refer to the connection in which the name Romaka occurs in the Sanskrit and Pāli works mentioned above. In the Pāli Piṭaka, Romaka is mentioned, as I have already said, in the Romaka Jātaka ¹ which describes a sham ascetic who, while living in a hut near a frontier village, was taken with the flavour of pigeon's flesh, and tried, contrary to the practice of the Buddhist ascetic whose place he occupied, to kill a certain pigeon for the purpose of eating it. This story was evidently intended to indicate the contrast of a Buddhist ascetic from a Roman ascetic, inasmuch as the former would under no circumstances kill any living creature.

The Mahābhārata? mentions the Romaka or Romans in

<sup>&</sup>lt;sup>1</sup> Romaka Jātaka, Jātaka Volume II., No. 277, edited by V. Fausboll.

<sup>ै</sup> द्यन्तां स्त्राचान् जनाटाचान् नानादिग्न्थः समागतान् । स्रोत्योकानन्तवासांस्य रोमकान् पुरुषादकान् ॥ १६॥

connection with the Rājasūya Yajña or coronation ceremony of Mahārāja Yudhiṣṭhira at Indraprastha or Delhi. The Romans are described there as having come with precious presents to offer to Yudhiṣṭhira, and as waiting at the gate of his palace before

getting admittance into the same.

I have already stated that Vṛhatsaṃhitā is a very learned work on astrology, compiled by the distinguished astronomer Varāhamihira about A.D. 505. In the 16th chapter of the work the eminent author divides the people of India and outside into various well-defined groups to each of which he assigns the influence of particular planets and stars. In ascertaining the absolute or relative strength of a certain nation at a certain time, one has simply to examine the strength of the planet or star presiding over that nation at that time. It is very curious that according to Varāhamihira the Romaka or Romans stand under the influence of Candra or moon while the Cīna or Chinese live under the influence of Bhāskara or the sun, and the Sveta-Hūṇa or the White Huns, Avagāṇa (probably the Afghans) and the Maru-Cīna or the desert-living Chinese, i.e., the Mongolians, imbibe the influence of Ketu or Dragon's Tail, and so on.

The Romaka-siddhānta already referred to is a Sanskrit work on astronomy based probably on the Roman original of the astronomer Hipparchus. This work is said to have been dated the second century A.D., as it has been reviewed in most other Indian astronomical works, and is stated by Varāhamihira to have been explained by Lāṭa Deva [perhaps of Gujrata]. In the Brahma-siddhānta and other works there is a controversy as to whether the authority of Romaka-siddhānta is to be accepted by Hindus. Some declare it to have stood outside the realm of Smṛtis or the Hindu Socio-religious institutes, while others establish its authority on the ground that it came forth, like all

# एकपादां च तत्राष्ट्रमप्रसं दारि वारितान्। राजानी विज्ञमादाय नानावर्णाननेकप्रः॥ १७॥।

(Mahābhārata, Sabhāparva, Chapter 51).

# गिरिसलिलदुर्भकोश्लभक्षक्ससुद्रशेमकतुखाराः। वनवासितङ्गग्रहलस्त्रीराज्यमहार्थवदीपाः॥ ६॥

(Vrhatsamhitā, Chapter XVI., edited by Dr. Kern, Calcutta, 1865.)

<sup>2</sup> Vide Shaukara Balkrishna Dikshit's article on Romaka-siddhānta in the "Indian Antiquary," May 1890.

Brahma-siddhanta, chapter I, verse 13. Compare also—

रोमकं रोमकायोक्तं मया यवनजातिषु । जातेन ब्रह्मणः प्रापात्तया दुर्यवनस्य च ॥ रोमके नगरे तच रोमकेण च विस्ततम् ।

(Pañcasiddhāntikā, Sudhākara's note, p. 2.)

other Hindu astronomical works, from the mouth of Sun-god himself, while that deity under the curse of Brahmā was born in the race of Yavana in the country of Romaka and told it to a Romaka or Roman by whose agency it was spread abroad. The anecdote here related points to the Roman origin of the Romaka siddhānta.

In the Vasistha-siddhanta, Suryya-Siddhanta, and other astronomical works already referred to, Romaka is mentioned as a Mahāpurī, Pattana or Visaya, i.e., a great city, state or dominion. Romaka is stated there to be the westernmost point of the horizon, while Siddhapura, Yamakoti and Lankā (Ceylon) are respectively the northern, eastern and southernmost points. By way of further explanation, it is affirmed that while there is sunrise at Lanka or Ceylon, there is midday at Yamakoti, sunset at Siddhapura, and midnight at Romaka or Rome; or in other words, Rome is supposed to be 90 degrees west of the meridian of Ceylon. But as a matter of fact Rome is only 69½ degrees west of Ceylon. How are we then to justify the statement of ancient Indian astronomers with regard to the actual distance of Rome from Ceylon? I explain the statement by supposing that Lanka signifies not only Ceylon but includes islands situated 8 or 10 degrees east of its meridian, while Romaka includes the Roman dependencies situated 10 or 12 degrees west of its own meridian. Albiruni, who flourished at the close of the 10th century A.D., in his "India" notices the Hindu astronomical works, including the Romaka-siddhanta, and supports the statement of Hindu astronomers by supposing that Romaka stands for the Roman Empire as far west as the northern part of Africa [extending perhaps to Moroccol. On either of the explanations given above Romaka or the westernmost part of the Roman Empire would be exactly 90 degrees west of the meridian of Lanka or the eastern part of the Ceylonese islands.

Some may say that Romaka of ancient Sanskrit and Pāli works does not signify Rome of Italy but denotes Rūma, that is, Byzantia or Constantinople. But this theory would be utterly groundless, for Constantinople is only 52 degrees west of the meridian of Ceylon, and under no circumstances can there be sunrise at Ceylon while there is midnight at Constantinople.

That Romaka is not Constantinople can be easily proved from a statement of Varāhamihira 2 who says, that while there is

<sup>&</sup>lt;sup>1</sup> Albiruni's India, p. 303, Volume I., edited by E. C. Sachau.

व्यगणाहिनवाराप्ति द्यंगणोऽपि हि देशकालसंबन्धात्। लाटाचार्येणोक्तो यवनप्ररेऽद्रक्तिंगे स्ट्र्यं॥ १८॥ रखुद्ये लङ्कायां सिंहचार्येण दिनगणोऽभिह्नितः। यवनानां निश्चि दश्मभिर्गते मुंहूर्तेख्व तद्ग्रणा॥ १९॥

<sup>(</sup>Dr. Thibaut's edition of Pancasiddhantika, p. 45.)

sunrise at Lankā there is midnight at Romaka, and 2 o'clock after midnight at Yavanapura or Alexandria; or, in other words, Yavanapura or Alexandria is 60 degrees west of the meridian of Lankā and 30 degrees east of the meridian of Romaka. We know that Alexandria and Constantinople are situated almost on the same longitude. So the statement of Varāhamihira would be utterly incorrect if we suppose Romaka to be Constantinople, but it would be fairly correct if Romaka is identified with Rome.

Further, the name Rūma as signifying Byzantia or Constantinople, did not come into existence before the occupation of the place by the Roman emperor Constantine in the 4th century A.D., while we have seen that the name Romaka was used in Pāli and Sanskrit works at least as early as in the 1st century A.D. In fact, the name Rūma as signifying Byzantia or Constantinople was made known in India by the Arabic writers in and after the 7th

century A.D.

The Sanskrit Jyotirvidābharana which mentions Rūma is a very modern work which did not exist before the time of Timurlane. This Rūma, as signifying Constantinople, is to be clearly distinguished from Romaka as signifying Rome. Dr. Kern 2 who did not distinguish between Ruma and Romaka observes that the name Ruma mentioned in Jyotirvidabharna stands for the more regular Sanskrit name Romaka. But this observation is, in my humble opinion, an oversight on the part of that eminent scholar. Indeed, there is not the slightest doubt that Romaka stands for Rome of Italy, for Varahamihira distinctly mentions Bhraukaccha and Samudra along with Romaka 3 as if to indicate that the Romaka or Roman used to come to India over the Samudra or sea, and landed at the port of Barukaccha or Bharoach, near Guzrat. The route incidentally indicated here in the Vrhatsamhita of Varahamihira exactly coincides with that by which the Roman traders actually used to come to India, as is evident from the writings of Pliny and others.

<sup>े</sup> यो रूमदेशाधिपतिं श्र्केश्वरं जिला ग्रहीलोज्जियनीं महाहवे। छानीय संभाम्य मुतंलहो श्रीविकमार्कः समसञ्जाविकमः॥ (Jyotirvidābharaṇa).

Vide Dr. Kern's edition Vrhatsamhitā, Preface, p. 13.
 Vrhatsamhitā, chapter XVI., verse 6.

- 2. Two New Cyprinoid Fishes from the Helmand Basin.—By C. TATE REGAN, B.A. Communicated by LIEUT.-COLONEL A. W. Alcock, C.I.E., F.R.S.
- [The Fishes collected in the affluents of the Helmand by Colonel Sir A. H. McMahon, K.C.I.E., C.S.I., and the officers of the Seistan Arbitration Commission, have, by the kindness of Messrs. G. A. Boulenger, F.R.S., and C. Tate Regan, of the British Museum, been identified as follows:—

Discognathus variabilis, Heckel; Scaphiodon macmahoni, n. sp.; Schizopygopsis stoliczkæ, Stdr.; Nemachilus stenurus, Herz.; and Nemachilus rhadinæus, n. sp.—A. W. A.].

### SCAPHIODON MACMAHONI, sp. nov.

41 to 42. Snout obtuse, shorter than the postorbital part of head. Diameter of eye 4 to 4½ in the length of head, interorbital width 23 to 23. Mouth inferior; lower jaw with nearly straight transverse anterior edge; barbel originating directly below the nostrils, shorter than the eye. Scales  $37-39\frac{7}{8}$ , 4 between lateral line and root of ventral fin, 16 or 18 round the caudal peduncle; the two rows above the lateral line the largest; scales of the lower part of the abdomen small or rudimentary. Dorsal III 10, its origin equidistant from tip of snout and base of caudal; third simple ray moderately strong, serrated in its basal half, \$ to \$ the length of head and 11 as long as the last branched ray; free edge of the fin straight. Anal III 6-7, the second branched ray a little longer than the first or the third and twice as long as the last, as long as or a little longer than the longest dorsal ray. Pectoral a little shorter than the head, extending  $\frac{2}{3}$  or  $\frac{5}{7}$  of the distance from its base to the base of ventral. Ventrals originating below the first branched ray of the dorsal, extending nearly to the origin of anal. Caudal forked. Caudal peduncle  $1\frac{1}{2}$  to  $1\frac{3}{2}$  as long as deep, its least depth not more than 1 the length of head. Grayish above, silvery below; fins pale or somewhat dusky.

Two specimens, 70 and 110 mm. in total length. The larger with tubercles on the snout and on the rays of the anal

fin.

Cyprinion kirmanense Nikolski, 1899, appears to be allied to this species, but differs at least in the larger eye, the thick and strongly serrated last simple dorsal ray, the form of the dorsal fin and the coloration.

### NEMACHILUS RHADINÆUS, sp. nov.

Depth of body 7 to 10 in the length, length of head 5 to  $5\frac{1}{2}$ . Depth of head  $\frac{3}{4}$  to  $\frac{4}{5}$  its breadth, which is  $1\frac{3}{5}$  to  $1\frac{3}{5}$  in its length. Diameter of eye  $7\frac{1}{2}$ - $8\frac{1}{2}$  in the length of head and  $1\frac{1}{2}$  to 2 in the interorbital width. Snout longer than postorbital part of head. Cleft of mouth extending to below the nostrils; lips moderately

thick, smooth, the lower interrupted medianly; six barbels; outer rostral barbel as long as the maxillary barbel, extending to or beyond the nostrils. Scales entirely wanting. Dorsal III 7, its origin nearer to tip of snout than to base of caudal; free edge of the fin convex. Anal II-III 5. Pectoral extending about  $\frac{1}{2}$  of the distance from its base to the base of ventral. Ventrals 8-rayed, originating below the anterior branched rays of the dorsal, extending  $\frac{1}{2}-\frac{3}{3}$  of the distance from their base to the origin of anal. Caudal slightly emarginate. Caudal peduncle 2 to  $2\frac{3}{4}$  as long as deep, its length 5 to  $5\frac{1}{3}$  in the length of the fish. Large oblong or rounded dark spots on the back and sides; dorsal and caudal with some small dark spots; lower fins pale, immaculate

Three specimens, 165 to 260 mm. in total length.

Perhaps allied to *Nemachilus sargadensis* Nikolski, 1899, the description of which is somewhat deficient in structural details, but the coloration appears to be too different to justify identification.

3. The Origin of Mankind (according to the Lamaic Mythology).—
By Rai Sarat Chandra Das, Bahadur, C.i.e.

In the beginning of the present Kalpa 1 when all living beings, with the exception of man, had sprung up in the regions of the Rirab (Sumeru) mountain, situated above the residence of the four Dika Pāla (guardians of the world called Mahārāja Kāyikā 2), two Deva-putra (angels) came down to this earth from heaven, on account of their merits having diminished and miraculously 8 became transformed into a shape which was the prototype of humanity. One of them was Nima 4 Rab-nang (refulgent sun), and the other was Dawa b Di-meh (stainless moon). These were followed by other angels whose term of residence in heaven had expired at the exhaustion of the merit they had acquired before. It should be remembered that the paradise, where gods live, is a place of harmless enjoyments. There neither virtue nor vice is acquired. A god only enjoys the fruit of his good karma. the moral merit that is to his credit becomes exhausted he cannot recoup it by fresh acts as long as he remains in heaven. He then returns to this world where there are opportunities to do both good and bad works.] In heaven there is no opportunity to acquire moral merit. Thus humanity, evolving from heavenly origin in course of time, multiplied on earth. These transformed and fallen divinities lived to immeasurably long age, and are said to have been of a very tall stature, something like thirty-two cubits in height. In that early age they subsisted on contemplation's food.6 Then there was no sun nor moon, nor day nor night; they moved in the light that emanated from their own bodies.7 They could walk in space and perform all their works miraculously in the

<sup>1</sup> 기취지기 great period of time; age.

<sup>॰</sup> मुजाके गायि।

<sup>3</sup> 변화 등 취취 miraculous birth.

<sup>4 3</sup> NITION the luminosity of this angel resembled that of the sun. It is probable that this individual, after acquiring immense moral merit, returned to heaven and there became the sun.

b a 5 5 5 The light that came out of the body of this angel was mild and cool like that of the moon. He too, like Nima Rabnang, eventually returned to heaven and became the moon.

<sup>6</sup> ਤੇ ਕੇ ਲੱ ਸ਼ਬਲਾ ਸ੍ਰਤ ਸ਼੍ਰੀ ਤਲਾ ਸ਼ੁੰਬਾ ਕਲੱ ਕਿ । Pag-sam jonzan, p. 10.

<sup>7</sup> ระวิรัฐเราฐณาฏิเราฐาน | Pag-sam jonzan̂, p. 10.

manner of the gods of the Dhyani-loka | heaven. When with the further exhaustion of their moral merits their longevity decreased,

there grew in their minds desire for tasting.

Sheebu 2 was the first of the human race who had tasted of the Those who came after him, being also grown by miraculous transformation, were called Sheebu-kyeh, and began to subsist on that ambrosial drink. Accordingly, their stomachs being stuffed with food, they began to feel the necessity of evacuations, which brought on uneasiness in their minds. Their body being thus tainted by impurities, its resplendence—glorious colours—gradually began to fade. When the luminosity of their person was lost, they became very unhappy. At this stage, while deploring the loss and downfall from a happier state they had sustained, they thought intently on the necessity of external light, without which they were no longer able to work for their existence. By the force of this concentrated wish of all humanity, and also on account of there still existing to their credit some moral merits, there appeared in heaven the sun, moon, constellations, and other numberless luminous bodies. Then there arose the division of time, day and night. With the appearing of light, the distinction of colour, the sense of beauty and ugliness, the discrimination of good from bad complexion, also pride, envy, etc., arose. These demerits caused the food of nectar to vanish from this In consequence of this fresh and greater misfortune, humanity now concentrated its desire for subsisting on something that was next in quality to the ambrosial food. By this combined willpower nature was forced to yield a condensed milky fluid which was formed on the surface of the earth when the gods had taken away the little nectar that had remained in the ocean by churning it. This was ( राष्ट्र १९४१) the earth-cream which contained nutrition similar but inferior to that which was in the food of the gods. enjoyed this delicious article for a great length of time. Increase of their demerit caused a corresponding decrease in the supply of earth-cream, in consequence of which mankind had to think of some other food to subsist upon. Vegetable shoots (ক্র'ন্ন now sprang forth everywhere, and furnished an inexhaustible supply They now sought variety, and accordingly, got the wildly (uncultivated) NINIA ATN'NA sali rice, which grew in the morning and matured at noon, and became fit for harvesting in the evening. Such were the blessings which people in the Krita yuga (EANT) i.e, the age of perfection, enjoyed. The duration of that age was 1,728,000 years.

At the end of the Krita yuga, there grew in the human kind a tendency for eating animal food. Indulgence in this brought out the development of the distinction of sex Sexual attachment and union became necessary for the multiplication of the race. Henceforward further addition by the miraculous transformation of fallen angels to humanity stopped. Out of the four fundamental vices, that of the sexual abuse, i.e., adultery, for instance, prevailed in this age. Modesty and shame now came into prominence in the human conduct, which created the necessity of residence in houses. People learnt the art of house-building. Birth from the womb became the necessary result of procreation. On account of the freedom from the three principal root-vices which this age enjoyed, it came to be known by the name Treta yuga or Sumdan 2 Its duration was 1,296,000 years. At the approach of a more degenerate age, humanity having erewhile not much to do for earning food, gradually turned idle. Lazy people, at each time, reaped more corn than was necessary for the day's consumption, and stored it up for use during the time they intended not to do any reaping work. In some houses there were provisions stored up for four or five days' use; in others, food for even seven days was kept. This storing up of corn produced the necessity for its protection by husk 3 At this stage, nature refused to supply a ready harvest for the subsistence of idle humanity. It now became necessary for people to betake themselves to the labours of the field for growing corn. When one party prepared a field for cultivation another party came and forestalled them in sowing corn which they had kept in store. When the time for harvesting came, a third party, who had neither tilled the soil nor sown grain, came and reaped the corn. There grew much confusion in the division of the produce which all the three parties claimed as their own. This brought in the

<sup>े</sup> नेते ' अवर ' प्रम्य मान्य स्वार स्वार

<sup>॰</sup> मासुसा स्व।

क्तिः । कि. थेट. पर्वेश शूचाश. ज.चाशूचा. ठाडूचा. येश. तर. चट्टेथ्.सैय.श. शूचाश. १. इ. चर्वेश शूचाश. ज.चाशूचा. ठाडूचा. येश. तर. चट्टेथ्.सैय.श. शूचाश.

question of right and possession. Honest men endeavoured to keep to themselves the fruit of their toil; idle and dishonest folks tried to subsist on the labours of others. This again raised the question of might and protection of property. It was now found that the age of commonwealth had passed away, and people now required a king to keep peace and to make property secure They, therefore, agreed to choose a king from among themselves whom they all should respect and obey. Accordingly, they elected Mahā Sammata 1 as their first king, who was so named on account of his being selected by the common consent and also for having been respected by all. This was the origin of royalty. His descendants came to be known as the Royal race, or Gyal-ri.2 As it was not expected of the monarch to earn his own food by personal labour, his time being required for the public weal, it was agreed by all to give him, out of gratitude, in return for his good service to the public, onesixth share 3 of the produce of the field. From this originated the payment of revenue to the state. It was, at about this stage of civilization, that one party removed another's property without leave or Hence originated theft, one party stealing another's property and thereby living at ease at other people's cost. This was recognized by the king as the crime of theft, which caused worldly enjoinments to degenerate. As two of the four vices, i.e., adultery and theft, now prevailed in this world, this age became known by the name Dwapar, i.e., after "two," or in Tibetan Ni-dan,4 the age in which two of the root-vices prevailed. Its duration was estimated at 8,640,000 years.

Thereafter began the present age, with the institution of farming lords <sup>5</sup> (in Europe, fuedal-lords). When peaceful measures failed to govern the people, the necessity of inflicting corporeal punishment, and death-sentence for heinous crimes, arose. The fear of punishment now brought lying and perjury into existence. The four fundamental vices, viz., adultery, theft, murder, and lying, were now recognized as great crimes, in consequence of which this age was called Kali yuga, or the age of strife and feuds. <sup>6</sup> Its

duration was 432,000 years.

Origin of the five great races of Jambudvīpa.7

The origin of the royal race has been described above. Such people as being averse to work and householder's life retired to

क्ष्यमुक्ष क्षाक्षिता क्ष्रिस्य क्ष्यम् क्षयम् क्ष्यम् क्षयम् कष्यम् क्षयम् कष्यम् विष्यम् विषयम् विषयम्यम् विषयम् विषयम्यम् विषयम् विषयम्यम् विषयम् विषयम्य

7 This paper embodies the translations of a few paragraphs from Pag-sam jonzan 지기기자자 일찍기로 pp. 16 and 17.

solitude for contemplation and for spiritual culture, were called Risi. Those who betook themselves to worldly life and resided in retired villages, and places remote from towns, for leading a pure life (Brahma caryā), and earned their living by reciting the Veda, were called the Brahmans. Those who, without committing theft, i.e., by trading honestly in other people's articles acquired wealth, were called the Je-rig (gentleman-caste).

Those who earned their living by serving the three superior races, by the labours of the field, and also by doing some work of mischief to others, were called the (5555) Mang-rig, i.e., the common people. Such people who possessed little sense of modesty and shame, committed theft, murder, etc., and earned their subsistence chiefly by doing menial service and mean works, were called the Sudra or Dol-wairig.<sup>5</sup>

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## FEBRUARY, 1906.

The Annual Meeting of the Society was held on Wednesday, the 7th February, 1906, at 9-15 P.M.

The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., F.R.S.E., Vice-President, in the chair.

The following members were present:-

Dr. N. Annaudale, Babu Muralidhar Banerjee, Babu Amritalal Bose, Major W. J. Buchanan, I.M.S., Babu Nobin Chand Baral, Babu Damodar Das Barman, Babu Monmohan Chakravarti. Mr. J. A. Chapman, Mr. B. L. Chaudhuri, Mr. J. A. Cunningham. Mr. J. N. Das-Gupta, Mr. Hari Nath De, Babu Mucksoodan Dass, Mr. F. Doxey, Rev. Father E. Francotte, S.J., Babu Amulya Charan Ghosh Vidyabhushana, Babu Hemendra Prasad Ghose, Mr. H. G. Graves, Mr. T. H. Holland, Mr. D. Hooper, Dr. W. C. Hossack, Mr. J. Macfarlane, Kumar Ramessur Maliah, Dr. M. M. Masoom, Major F. P. Maynard, I.M.S., Mr. W. H. Miles, Mohamad Hossain Khan, Babu Panchanan Mukhopadhyaya, Hon. Mr. J. D. Nimmo, Mr. W. Parsons, Lieut.-Col. D. C. Phillott, 23rd Cavalry, F.F., Major L. Rogers, I.M.S., Rai Ram Brahma Sanyal Bahadur, Pandit Yogesa Chandra Sastri-Samkhvaratna-Vedatirtha. Dr. C. Schulten, Mahamahopadhyaya Haraprasad Shastri, Babu Chandra Narain Singh, Dr. Amrita Lal Sircar, Pandit Promatha Nath Tarkabhushan, Mahamahopadhyaya Chandra Kanta Tarkalankara, Babu Nagendra Nath Vasu, Pandit Jogindra Nath Vidyabhushan, Mahamahopadhyaya Satis Chandra Vidyabhushan, Mr. E. H. C. Walsh, Mr. E. R. Watson,

Visitors:—Babu Devendra Nath Banerjee, Babu Gopal Das Banerjee, Babu Manindra Nath Banerjee, Babu Rakhal Das Banerjee, Babu K. C. Baral, Mr. J. W. A. Bell, Babu Kali Krishna Bhattacharjee, Babu Sasi Bhushan Bhattacharjee, Babu Tara Sunder Bhattacharjee, Sri Padmanande Bheksha, Mr. J. C. Brown, Babu Purshottam Das Burman, Babu Kali Chandra Chakravarri, Babu Sivavrata Chattopadhyaya, Dr. J. N. Cook, Babu Asutosh Dey, Mrs. F. Doxey, Mr. H. M. Hanifuddiqni, Mr. J. Horne, Mr. and Mrs. W. R. Le Quesne, Mr. and Miss Macdonell, Mr. A. M. Mahfuz, Babu Birajmohan Mazumdar, Mr. and Mrs. Meares, Babu Charu Chandra Mitra, Babu Byomakesh Mustaphi, Mr. A. J. Oliver, Babu Radha Kishna Pall, Mr. Perkins, Rev. Fr. James Power, S.J., Mr. D. N. Ray, Babu Haradhan Ray, Babu Sashee Bhushan Ray, Mr. C. K. P. Roberts, Babu Hitavrata Samakantha, Mr. J. C. Samajpati, Babu R. L. Seal, Babu Satyendra Nath Sen,

Mr. P. N. Singh, Mr. K. V. Smith, Rev. Fr. J. Vauckell, S.J., Mrs. A. W. Young.

The Secretary read a letter from His Honour Sir Andrew Fraser, President of the Society, expressing his great regret at being unable to be present at the Annual Meeting of the Society.

According to the Rules of the Society, the Chairman ordered the voting papers to be distributed for the election of Officers and Members of Council for 1906, and appointed Major L. Rogers and Mr. L. L. Fermor to be scrutineers.

The Chairman announced that the Elliott Prize for Scientific Research for the year 1905 would not be awarded as none of the essays received in competition were of sufficient merit to justify the award of the Prize.

The Chairman called upon the Secretary to read the Annual Report.

# ANNUAL REPORT FOR 1905.

The Council of the Society have the honour to submit the following Report on the state of the Society's affairs during the year ending 31st December, 1905.

#### Member List.

There has been a steady increase in the list of Ordinary Members.

During the year under review, 43 Ordinary Members were elected, 18 withdrew, 3 died, and 8 were removed from the list, viz.: 3 under Rule 38, as defaulters; 3 under Rule 40, being more than 3 years absent from India; and 2 under Rule 9, not having paid their entrance fees. The election of one member was cancelled at his own request. The total number of members at the close of 1905 was thus 357 against 343 in the preceding year. Of these 144 were Resident, 133 Non-Resident, 12 Foreign, 20 Life and 47 absent from India, and one Special Non-Subscribing Member, as will be seen from the following table, which also shows the fluctuations in the number of Ordinary Members during the past six years:—

	Paying.				Non-Paying.				
YEAR.	Resident.	Non- Resident.	Foreign.	Total.	Life	Absent	Special Non-Sub- scribing	Total.	TOTAL.
1900	116	124	18	258	22	30	1	53	311
	123	133	13	269	22	36	1	59	328
	126	126	14	266	21	46	1	68	334
1902	127	126	15	268	21	45	1	67	335
1903	132	130	14	276	21	45	1	67	343
1904 1905	144	133	12	288	20	47	1	68	357

The three Ordinary Members, whose loss by death during the year we have to regret, were Mr. H. W. Peal, Dr. W. T. Blanford (Life Member) and Raja Jay Krishna Das, Bahadur.

Owing to the death of Dr. W. T. Blanford, Life Member and Honorary Member, the Council has recommended Lord Curzon to

fill this vacancy.

The list of Special Honorary Centenary Members and Associate Members continued unaltered from last year, their numbers standing at 4 and 13 respectively.

No Members compounded for their subscription during the

By the operation of Nos. 5 and 7 of the Society's Rules, sometimes nearly two full months elapsed between the date of application of a candidate and the ballot for his election. To shorten this period, the Society has revised Rules 5 and 7, and at present a candidate is ballotted for within one week after the submission of his name to the Council.

### Indian Museum.

Only one change has occurred amongst the Trustees, namely, that caused by the retirement of Sir J. A. Bourdillon, K.C.S.I., and the Hon. Mr. Justice Asutosh Mukhopadhyaya, D.L., was appointed to fill the vacant place. The other Trustees who represent the Society have been :-

The Hon. Sir Alexander Pedler, Kt., F.R.S., C.I.E.

G. W. Küchler, Esq., M.A.

T. H. Holland, Esq., F.G.S., F.R.S.

J. Macfarlane, Esq.

#### Finance.

The Accounts of the Society are shown in the Appendix under the usual heads. In this year's account there is an additional statement under the head "Bardic Chronicle MSS." Statement No. 10 contains the Balance Sheet of the Society and of the different funds administered through it.

The credit balance of the Society at the close of the year was Rs. 1,93,143-1-9 against Rs. 1,92,939-7-5 in the preceding

year.

The Budget for 1905 was estimated at the following figures:— Receipts Rs. 18,100, Expenditure Rs. 22,683 (ordinary Rs. 17,654. extraordinary Rs. 5,029). Taking into account only the ordinary items of receipts and expenditure for the year 1905, the actual results have been:—Receipts Rs. 20,689-2-11, Expenditure Rs. 15,521-14-1, showing a balance in favour of the Society on its ordinary working of Rs. 5,167-4-10. Against this balance there have been several extraordinary items of expenditure amounting to Rs. 6,452-12-6. The total expenditure of the year has, therefore, been a little more than the income. There is a Temporary Investment of Rs. 45,100 at the close of the year, out of which Rs. 31,946-3-10 is in favour of the Society (besides Rs. 9,132-9-10 due to the Society from the Oriental Publication Fund, Members, etc.), Rs. 3,274-9-9 Oriental Publication Fund (after a loan of Rs. 2,000 from the Society's fund to pay off bills), Rs. 3,120-2-5 Sanskrit MSS. Fund (less Rs. 1,000 advanced to the Joint Philological Secretary for the purchase of Sanskrit MSS.), Rs. 4,459 Arabic and Persian MSS. Fund (less Rs. 3,000 advanced to the Officer in charge of the Arabic and Persian Search for the purchase of Arabic and Persian MSS.), and Rs 2,400 Bardie Chronicle MSS. Fund. In addition to this, a sum of Rs. 1,200 has been added to the Reserve Fund from entrance fees. received during the year.

The Ordinary expenditure was estimated at Rs. 17,654, but the amount paid out was only Rs. 15,521-14-1. On the expenditure side, the items of "Salaries," "Pension," "Commission," "Postage," "Freight," "Meetings," "Contingencies," "Books," "Binding," "Printing Circulars, etc.," all show a slight increase, excepting "Freight," "Books," "Binding," and "Printing Circulars, etc." Owing to several consignments of books received during the year, "Freight" shows an increase of Rs. 60-0-6. For the same reason, there is an increase of Rs. 232-9-4 under "Books." This was expected, an extra grant of Rs. 1,000 having been sanctioned. The estimate for "Binding" has been exceeded by Rs. 507-10. This is due to binding a large number of books in the Society's library, for which an extra grant of Rs. 1,000 was also sanctioned. As certain acknowledgment forms had to be printed, and a larger number of circulars than usual was required, there is an increase of Rs. 86-11-9 under the head "Printing Circulars, etc." The actual expenditure on the Journal and Proceedings and Memoirs was Rs. 5,732-1-3 against a budget provision

of Rs. 7,300, but all the bills for the publications of the past

year have not yet been paid.

There was only one extraordinary item of expenditure during 1905 under the head "Furniture" not provided for in the Budget. Rs. 183-8 was paid for a book-case for the Society's library, and

Rs. 136-3-6 was spent for new shelves and chairs.

The expenditure on the Royal Society's Catalogue (including subscription sent to the Central Bureau) has been Rs 1,597-15, while the receipts under this head from subscription received on behalf of the Central Bureau (including the grant of Rs 1,000 from the Government of India) Rs. 1,481-5. A sum of Rs. 854-8 has been remitted to the Central Bureau, and Rs. 236 is still due to them.

Three Extraordinary items of expenditure were budgetted for. Out of the sum of Rs. 1,000 for the Library Catalogue, only Rs. 177 has been spent on account of printing charges. Rs. 2,809 was budgetted for picture-frames but Rs. 3,313-2-6 has been spent, the excess being due for backing the pictures with oil-cloth and other expenses incurred Rs. 1,265 were spent on the building, while a sum of Rs. 1,220 was budgetted for. Rs. 1,220 were paid for white-washing and colour-washing part of the Society's premis-

es, and Rs. 45 for repairing the roof.

The Budget estimate of Receipts and Disbursements for 1906 has been fixed as follows:—Receipts Rs. 18,700, Expenditure Rs 18,683. The items "Salaries," "Commission," "Pension," "Municipal Taxes," "Postage," and "Contingencies" have all been increased. "Salaries" have been increased by Rs. 200, owing to certain increments sanctioned to the office staff. "Commission," "Pension," and "Postage" are based upon the actuals of the last year. There is a heavy increase of Rs. 581 on account of Municipal Tax owing to a new assessment. "Contingencies" has been increased by Rs. 150. This is due to providing the menial servants

with new clothing for the cold weather.

Ten extraordinary items of expenditure have been budgetted for during the year 1906, namely, Rs. 1,000 for the new Library Catalogue, Rs. 330 for book racks for storing periodicals, Rs. 100 for illuminating the Society's building on the night of the illumination during the visit of T.R.H. The Prince and Princess of Wales, Rs, 1,000 for new books, Rs. 500 for binding, Rs. 2,300 for printing the Journal and Proceedings and Memoirs published during 1905, Rs. 1,800 for printing the Persian translation of Morier's Haji Baba, Rs. 500 the cost of a complete lantern for the Society's Meeting, Rs. 155 for renewing the lights and fans in the room let to the Automobile Association of Bengal, and Rs. 288 for picture rods. Besides these provisions, there will be a heavy expenditure on account of repairs and certain structural improvements in the Society's building, the total cost of which is not yet settled.

The Hon. Mr Justice Asutosh Mukhopadhyaya continued

Treasurer throughout the year.

### BUDGET ESTIMATE FOR 1906.

### Receipts.

	1905. Estimate.	1905. Actuals.	1906. Estimate.
	Rs.	Rs.	Rs.
Subscriptions	7,800	8,503	8,000
Sale of Publications	600	1,322	800
Interest on Investments	6,000	6,892	6,200
Rent of Room	600	550	600
Government Allowances	3,000	3,000	3,000
Miscellaneous	100	422	100
Total	18,100	20,689	18,700

### Expenditure.

			Rs.	Rs.	Rs.	
Salaries	•••		3,800	3,810	4,000	
Commission			425	456	450	
Pension			192	204	240	
Stationery			120	67	120	
Lights and Fans		•••	320	228	320	
Municipal Taxes			884	884	1,465	
Postage			500	539	525	
Freight	•••		100	160	100	
Meetings			100	123	100	
Contingencies		•••	500	529	650	
Books	• • •	•••	2,000	2,232	2,000	
Binding			700	1,208	700	
Journal, Part I	•••	•••	2,100	1,792		
", ", II			2,100	1,549		
" " III	•••		2,500	590		
Proceedings			600	423		
"Journal and Pro	ceedings"	and				
" Memoirs "	·				7,300	
Printing Circulars	s, etc.	***	200	287	200	
Auditor's Fee			100	100	100	
Petty Repairs			100	27	100	
Insurance	•••	•••	313	313	313	
	Total	•••	17,654	15,521	18,683	

#### Extraordinary Expenditure.

	Est	1905. imate.	1905. Actuals.	1906. Estimate	€.
		Rs.	Rs.	Rs.	
Library		1,000	177	1.000	
373			31.0	330	
Illumination		•••		100	
Books		• • •		1.000	
	• • • •			500	
"Journal and Proceedings" an	$_{\rm d}$				
	••		1,378	2,300	
Printing Haji Baba .		.,,	***	1800	
		•••	***	500	
Renewal of wiring for Electr	ic				
Lights and Fans for Autom	0~				
	• •	•••	.,.	155	
	••			288	
	••	2,809			
Building	••	1,220	1,265		
Total		5,029	6,452	7,973	

#### Agencies.

The number of the copies of the Journal and Proceedings and of the Bibliotheca Indica sent to Mr. Bernard Quaritch, the Society's London Agent, during the year 1905, for sale, were respectively 540 and 639, valued at £75 and Rs. 331-12, of which £49-9 and Rs. 105-14 worth have been sold for us.

Nine invoices of books purchased and of publications of various Societies sent in exchange were received during the year,

the value of the books purchased amounting to £108-12-4.

The number of copies of the Journal and Proceedings and of the Bibliotheca Indica sent to Mr. Otto Harrassowitz, the Society's Continental Agent, during 1905, for sale, were 417 and 516, valued at £43-16 and Rs. 256-10. The sale proceeds have been £19-13 and Rs. 306-6, respectively.

#### Library.

The total number of volumes or parts of volumes added to the Library during the year was 2,559, of which 653 were purchased and 1,906 presented or received in exchange for the Society's publications.

The new edition of the Society's Library Catalogue is still in press, and a little over half the MS. has already been set up. The work of reading the proofs has been entrusted to Professor Hari Nath De under the supervision of the General Secretary.

There were several Meetings of the Library Committee during the year, and it was resolved to remove all the periodicals to the ground floor of the building and to bind all the books and periodicals in the Society which required it. For this purpose nearly two-thirds of the Library has been examined, and 22 book racks have been purchased for the accommodation of the periodicals.

Owing to increase in the number of Sanskrit MSS., it has been found necessary to separate the Sanskrit MSS. from those in Arabic and Persian, and the west room has been set apart to accommodate the former.

At the suggestion of Sir Charles Lyall, the Hebrew MS. containing the translation of an early Italian work on the Koran in

the Society's Library was presented to the British Museum.

In modification of the order regarding the proposed rejection of certain books from the Society's Library, the General Meeting resolved that the Library Committee be empowered to settle the prices of books with authority to offer Government publications to Government. Only two such publications have been accepted (by the Imperial Library), and other public bodies have written to say that the books offered for sale were not required by them. The books will now be stamped with a special stamp and put up to public auction.

The question of the procedure to be followed in lending out MSS, both in India and Europe, was referred to a Sub-Committee, which drew up the new rules published in the Proceedings for

December 1905.

In continuation of the Council order, the Imperial Library has been allowed to borrow books and MSS. from the Society for the use of its readers, until 31st August 1906, subject to the new rules for lending out MSS. During the period from September 1904 to August 1905, forty-nine books and MSS. have been thus borrowed.

Babu Mahendra Nath Mukerjee resigned his appointment as the Pandit for the Oriental Library in October, and Babu Kunja Behari Nyayabhushana was appointed to fill the vacant post.

The Library was in charge of Mr. J. H. Elliott, the Assistant

Secretary and Librarian of the Society.

### International Catalogue of Scientific Literature.

During the year the volumes on Chemistry, Meteorology, Botany and Zoology of the second annual issue, and volumes on Mathematics, Mechanics, Physics, Astronomy, Physiology, and Bacteriology of the third annual issue were received and have been distributed to the subscribers.

On completion of the 2nd Annual Issue of the International Catalogue bills have been made and submitted to subscribers for payment of the amount of subscription. A sum of Rs. 854-8 has been remitted to the Central Bureau during the year, representing

part of the subscription to 1st and 2nd Annual Issues.

The Director International Catalogue of Scientific Literature informed the Regional Bureau that a convention was to meet in London on 25th July, to consider the question of extending the issue of Scientific Catalogue beyond the first five annual issues, and asked this Bureau to appoint one or two delegates to represent

the Regional Bureau for India and Ceylon. Dr W. T. Blanford and Lt.-Col. D. Prain, upon the invitation of the Council, agreed to perform this duty. The death of Dr. Blanford, shortly before the date fixed for the Convention, left no time to appoint a delegate in his place, and, accordingly, Lt.-Col. D. Prain attended the Convention alone and voted with the majority in favour of the continuation of the publication of the International Catalogue to a further period of five years.

The Government of India was pleased to sanction a grant of Rs. 1,000 for the expenses of the Regional Bureau. During the year 786 Index slips were made, and after having been checked

by the experts, were sent to the Central Bureau, London.

#### Elliott Prize for Scientific Research.

On the recommendation of the Director of Public Instruction. Bengal, a second medal was awarded to Babu Surendra Nath Maitra for his essay submitted in competition for the Elliott Prize for Scientific Research for 1904 under rule G; and Babu Sarasilal Sarkar was paid Rs. 150, being part of the award for his essays submitted in competition for the Elliott gold medal during the years 1897 and 1901.

### Barclay Memorial Medal.

In connection with the Barclay Memorial Medal, the Council awarded the medal for 1905 to Lieut-Col. D. D. Cunningham, F.R.S., in recognition of his biological researches.

### Society's Premises and Property.

The proposed thorough repairs and structural improvements in the Society's buildings have not yet been completed, although Messrs. Mackintosh, Burn & Co. have substituted steel joists for all the wooden beams except in two rooms on the ground floor. Mr. E. Thornton has promised a complete scheme for the restoration of the building, and the work will be taken in hand during the present year.

All the pictures of the Society have been temporarily hung, and after the repairs to the Society's building are completed, they will be suspended on picture-rods, to be fitted up by Messrs. Leslie

& Co. at a cost of Rs. 288 sanctioned by Council.

### Exchange of Publications.

During 1905, the Council accepted seven applications for exchange of publications, viz: (1) from the Victoria University of Manchester, the Society's Journal and Proceedings and the Memoirs being exchanged for their publications; (2) from the Cambridge Antiquarian Society, the Society's Journal and Proceedings and the Memoirs being exchanged for the publications of that Society; (3) from the Bureau of Government Laboratories, Manila, the Society's Journal and Proceedings and the scientific portion of the Memoirs for the publications of their Laboratory; (4) from Dr. F. Fedde, editor of the Botanischer Jahresbericht, the Society's Journal and Proceedings and the Memoirs containing biological articles only for his "Litteratur der Morphologie und Systematik der Phanerogamen"; (5) from the Colombo Museum, the Society's natural history publications being exchanged for their "Spolia Zeylanica"; (6) from the University of Michigan, the Society's Journal and Proceedings and the scientific portion of the Memoirs for the Report of the Michigan Academy of Science; (7) from the Ethnological Survey of the Philippine Islands, Manila, the Society's Journal and Proceedings and the anthropological and scientific portion of the Memoirs being exchanged for the publications of that Survey.

The exchange of publications with the Royal Statistical So-

ciety of London has been stopped.

The revision of the Society's list of Exchanges and the distribution of the *Memoirs* to Societies, etc., are under consideration. The following gentlemen have been appointed to report on them:—

J. Macfarlane, Esq. T. H. Holland, Esq. Dr. E. D. Ross. Dr. N. Annandale.

#### Publications.

The question of extending and improving the Society's publications has occupied the attention of a special Sub-Committee, and, after due deliberation, the Council accepted their recommendations, namely:—

1. Publication of a quarto series styled Memoirs.

2. Publication of a new series (8vo.) containing the *Journal* and *Proceedings* combined.

3. Paper and type selected for the purpose to be used.

- 4. Insertion of advertisements relating to books and instruments.
- 5. Appointment of Messrs. Thacker, Spink & Co. to secure advertisements.
- 6. Publication of such resolutions of Council as the Council may determine in the Proceedings.

The arrangements for insertions of advertisements are not yet

complete, and none have appeared.

There were published during the year fourteen numbers of the Proceedings and Journal (Proceedings Nos. 9-11 of 1904; Journal Part II, Extra No. 1904; Journal Part II, Supplement 1904, Journal Part III Extra No. 1904, and Journal and Proceedings, N.S., Vol. I, Nos. 1-8 of 1905) containing 500 pages and 9 plates.

Of the Memoirs, six numbers were published (Vol. I, Nos.

1-5 and 7) containing 118 pages and 7 plates.

The Numismatic Supplement Nos. 4 & 5 have been published in the Journal Part I, Extra No. of 1904, and Journal and Proceedings, N.S., Vol. I, No. 4 of 1905, under the editorship of

Mr. Nelson Wright.

There were also published the Indexes to Journal Parts II and III for 1904 and a Persian translation of Morier's Adventures of Hājī Baba of Ispahan by Hājī Shaikh Ahmed-i-Kirmānī, edited with very valuable notes bearing on idiomatic peculiarities of modern Persian by Major D. C. Phillott.

Owing to the increased number of members, it was found necessary to print 700 copies of each issue of the Journal and

Proceedings and Memoirs, instead of 650.

To facilitate the publishing of papers, and to avoid the delay often caused by reference to Council, that body has appointed a Standing Publication Committee composed of the Editors of the Journal and Proceedings, giving them power to sanction the the printing of papers within the amount of the sanctioned grant, but not to reject any paper.

In order to secure a uniform and suitable system of transliteration for all the publications of the Society, the Council has invited Lieut.-Col. Phillott and Dr. Ross to draw up a revised scheme for the transliteration of Persian, Urdu and Arabic Alphabets. For the Devanagari alphabet and for all the alphabets relating to it, the system in force seemed to call for no alteration.

It is proposed to publish in the Society's Memoirs a series

of photographic facsimiles of autographs and signatures of famous

Eastern authors and monarchs at a cost of Rs. 250. The Proceedings were edited by the General Secretary, Mr. J. Macfarlane. The Philological section of the Journal was edited by Dr. E. D. Ross, the Philological Secretary. The coin cabinet was in charge of Mr. H. N. Wright, the Numismatic Secretary, who also reported on all treasure trove coins sent to the Society. Mahamahopadhyaya Haraprasad Shastri was in charge of the Bibliotheca Indica and the work of collecting Sanskrit MSS. The Natural History section of the Journal was edited by Major L. Rogers, I.M.S., and the Anthropological section by Dr. N. Annandale, with the exception of two months when Mr. H. E. Stapleton officiated for him.

### Philology, etc.

There were several papers of historical importance published in the Journal.

Mahāmahopādhyaya Haraprasād Shāstrī gave a brief History of Nyāyasāstra from Japanese Sources, the logical system of Aksapada which, though completely lost to India, is still studied and commented upon in China, Japan, Corea, and Mongolia. Japan, says the writer, it has a rival in the European system, but this rivalry has only strengthened the position of that ancient school of logic.

Mahāmahopādhyaya Professor Satis Chandra Vidyabhusana, M.A., gives the story of the life of Sarvajña-mitra, a Tantrika Buddhist author of Kāśmīra, in the eighth century A.D. The same scholar described Lankāvātāra Sūtra, an ancient Buddhist Sanskrit work, which gives an account of an imaginary visit paid by Buddha to Rāvaṇa, the king of Lankā, and contains a copious explanation of the Buddhistic metaphysical doctrines. In another number he gave an account of Anuruddha Thera, a learned Pali author of Southern India, in the twelfth century A.D.

Babu Ganga Mohan Laskar, M.A., a research scholar, deciphered four new Copper-plate charters of the Somavamsi kings of Kośala and Kaṭaka, sent some time ago from the Pāṭna State in the Central Provinces to the Society. They form an addition to the six charters of these kings edited by Mr. Fleet in the Epigraphia Indica (Vol. III, pp. 323-359). Of these new land-grant charters, one belongs to Mahā-Bhavagupta I. and the rest to Mahā-Sivagupta. The language and characters of both the old and new charters are the same.

The identity of Halâyudha, the author of Brâhmanasarbasva and Prime Minister of Lakshmana Sena, son of Ballâla Sena of Bengal, was discussed by Pundit Yogeša Chandra Sastree, who came to the conclusion that he was not the same personage as Halâyudha of the Chatta family who was honoured by Ballâla Sena, or Halâyudha, the ancestor of the Tagore family of Calcutta. Babu Monmohan Chakravarti, M.A., described and edited the poem Pavana-dūtam, or Wind-Messenger, by Dhoyika, a court-poet of Lakṣmaṇasena of Bengal. The appendix on the Sena Kings of Bengal, which forms part of this paper, is a brief but useful contribution to the history of this Dynasty.

Mr. W. N. Edwards described some interesting archaeological remains in Bishnath in the way of fortifications, temples, etc. There are, he tells us, several inscriptions there which have not yet been described. Babu Nagendra Nath Gupta wrote on the well-known Maithil poet Vidyāpati Thākur, and Mr. Justice Sarada Charan Mitra contributed a note on Caṇḍeśvara Thakkura, the author of a recognized work on the Mitākṣarā system of Hindu Law.

Only three contributions were made to Mohammedan history during the period under review. Mr. William Irvine continued his most valuable monograph on the Later Mughals (1707-1803) and treated the subject with that thoroughness which characterises all his contributions to the history of the Mahomedan period. Major W. Haig, I.A., wrote some notes on the Bahmani Dynasty; and Mr. H. Beveridge briefly told of some interesting facts relating to the Emperor Bābar which are not mentioned in Erskine and Abul Fazl.

Of papers of Linguistic interest there was one containing a collection of 100 Kolarian riddles current among the Mundaris in Chota Nagpur by the Rev. Paul Wagner, and another on the Similarity of the Tibetan to the Kashgar-Brahmi Alphabet by the Rev. A. H. Francke, which was published in Vol. I., No. 3 of the Memoirs.

No less than half a dozen valuable papers on Tibetan subjects were contributed by Rai Sarat Chandra Das, Bahadur, C.I.E.

All of these papers were at once important and interesting, and bore testimony to the knowledge and industry of the writer. The following were the more important ones:—(1) The Hierarchy of the Dalai Lama (1406-1745); (2) The Monasteries of Tibet; and (3) Tibet under the Tartar Emperors of China in the 13th Century A.D. Mahāmahopādhyaya Professor Satis Chandra Vidyābhūṣana, M.A., also wrote a useful paper on certain Tibetan Scrolls and Images lately brought from Gyantse during the recent British Expedition to Tibet, in Vol. I., No. I., of the Memoirs. A very important paper on Arabic Alchemy was published by Messrs. Stapleton and Azoo, which, though properly belonging to our scientific publication, has considerable philological importance.

### Natural History, etc.

The activity of the Natural History Section of the Society has been well maintained during the past year, during which a number of important papers have been published, extending over a wide range of subjects. Among the Zoological contributions are four papers on Indian snakes and lizards by Dr. Annandale, describing the additions made to the collection of the Indian Museum for some years past, and including some new species, and on the lizards of the Andaman Islands. The same author also contributes some other papers including Studies of the Fauna of Indian tanks, about which very little is yet known, while the earwigs of the Indian Museum have been named by Mr. Burr. Botany is well represented by further work on the Flora of the Malayan Peninsula by Sir George King and Mr. Gamble, and by a paper on the yams by Colonel Prain and Mr. Burkill. Two papers on the chemistry of certain insects and plants have been contributed by Mr. Hill, while a notable one entitled "Sal Ammoniac"—a study in Primitive Chemistry," by Mr. Stapleton, has appeared as a Memoir; as has also one on the Chemistry of the Arabs by Messrs. Stapleton and Azoo. Among the Geological papers may be mentioned a valuable one on the chemical analysis of a clay found in Bundelkand by Mr Silberrad, while at the December meeting a most interesting and instructive lecture was delivered by Mr. Holland on the Kangra Valley earthquake, illustrated by a series of lantern slides. The great success of this meeting in attracting an unusually large attendance will encourage the Council to continue its recent efforts to make the meetings more interesting than they have been for some time past, by having purely technical papers taken as read, and, as far as possible, providing some subject of general interest for consideration of each meeting.

## Anthropology, etc.

During the past year several short communications and one rather lengthy one (in continuation of a former paper) have been published in the *Journal* and *Proceedings*, while three anthropological

<sup>\*</sup> Also noticed under the heading Anthropology.

Memoirs have appeared and others are in the press. published Memoirs one is of great general interest, illustrating the close relations between animism and the beginnings of physical science in the East, while the others are important contributions to local folklore and ethnology. It cannot be said, however, that the progress of the study of anthropology has been altogether satisfactory as regards the Society. Abundant material is received for publication; but no discussion is aroused at the meetings, and there seems to be a tendency to treat the different branches into which the study of man may be divided as devoid of scientific dignity, to ignore all that has previously been written on the subjects treated. and to forget external relationships. Every branch of biology anthropology as much as any other-may be legitimately treated in one of three ways:—(1) the investigator may content himself with compiling and abstracting in a detailed manner all that has already been published on any one subject; (2) he may record facts previously unknown or ignored; or (3) he may aspire to the more ambitious task of treating his theme in a comparative manner, from the standpoint of a wide and deep study of allied and conflicting phenomena. In India the compiler (acknowledged as such) and the recorder can add very largely to the sum of human knowledge, but if they mingle things new and old indiscriminately, they run the risk of having their work ignored by serious students of anthropology. The Anthropological Secretary must appeal to contributors not to cast on him the sole burden of discovering, in every case, whether a communication contains sufficient original matter, or forms a sufficiently "thorough" account, to merit publication. The bulk of anthropological literature is already so great, and increases so rapidly, that unnecessary repetition of details can only complicate the student's task. If anthropology is a science, it merits some preliminary study.

A scheme is in hand for the publication in the *Memoirs* of figures and descriptions of interesting Asiatic implements, weapons, and the like; but as nothing has yet been produced,

details must be postponed until next year.

### Coins.

Thirteen gold, one hundred and forty-six silver and one copper coins have been presented to the Society during the year 1905. The coins are of the following periods:—

Mediæval India .	Sassanian types A
	Gadhaiya coins AR
Independent Bengal .	Shamshuddin Iliyas R 2
	Husen Shah AR 5
Mughal .	Akbar A 2, A 1, A 1 4
	Jahānoir 🔊 🗚 o
	Shāhjahān ,, 2
	: : : : : : : : : : : : : : : : : : :
	Carried over 23

February, 1906.]	Annual Report.	xix
	Brought forward	23
Mughal—contd.	Aurangzeb R	1
	Farrukhsir "	1
	Muhammad Shāh "	23
	Ahmad Shāh ",	24
	Alamgir II. ,,	25
	Shāh Alam II. "	20
Assam	Rudra Singh ,,	2
	Shiva Singh and Pramathe	swari
	Begam	Æ
	Shiva Singh and Phuleswari	
	Begam	,, 1
	Pramātha Singh	,, 5
	Rājeswara Singh	,, 5
	Lakshmi Singh	,, 6
	Gauri Nāth Singh	,, 10
French Compagnie des	Indes	,, 1
South India	Vijayanagar	$A' \dots 5$
European	Venetian ducats	,, 2
Ottoman Sultana		,, 4
		158

Of these twelve (nine gold and three silver) were presented by the Bombay Government, and one (a copper coin) by the United Provinces Government.

During the year the Honorary Numismatist examined and reported on 8,548 coins forwarded as treasure trove from various districts in Bengal, Assam, the Central Provinces, and the Punjāb.

One find alone contained 4,500 copper coins, but of these only

218 were recommended for acquisition.

By order of the Government of India, the name of the Numismatic Collection attached to the Public Library at Shillong was added to the list of institutions among which coins are distributed under the Indian Treasure Trove Act.

#### Bibliotheca Indica.

The publication of the Bibliotheca Indica series was supervised by the Joint Philological Secretary. The regular income of the Oriental Publication Fund can bear the cost of publishing twenty-four fasciculi. In 1903, however, thirty-six fasciculi were issued, and in 1904 forty-two, whereby the accumulated balance became exhausted. In September 1905, it was found that the number of fasciculi due to appear would cost much more than the regular income of the fund, and it was necessary to prevent the publication of more than one fasciculus of each work in hand. In spite of this limitation, thirty-four fasciculi have been published in the year under review, and special measures had to be taken to meet the cost of their publication.

These thirty-four fasciculi were issued at a cost of Rs. 13,231,

the average cost per fasciculus being Rs. 389.

By a resolution of the Council, dated 30th September 1898, the annual statement of Bibliotheca Indica publications is limited to those works which were either commenced or which came to a

close during the year.

Among the works taken in hand during the course of the year may be mentioned Saddaršana-Samuccaya, by Haribhadra, a great Jain writer who died in A.D. 479. He wrote a short work on the six Systems of Indian Philosophy, namely, Bauddha, Naiyāyika, Jaina, Saṃkhya, Vaišeṣika and Mīmāṃsaka. Those who consider Nyāya and Vaišeṣika to be one and the same system add Cārvāka to the list. The text was published some time ago in Italy. The present edition is accompanied by a commentary entitled Tarkarahasya, by Guṇaratna, who flourished in the fourteenth century. The Commentary though modern gives copious information about the schools, their works, their authors and their teachers. It furnishes ampler materials for a history of Hindu philosophy than any other single book. The editor is Dr. Luigi Suali of Bologna, a distinguished pupil of Professor Hermann Jacobi.

The other work taken in hand is the Lower Ladakhi Version of the Kesar Saga by the Rev. A. H. Francke, Moravian missionary. The version was dictated slowly to him by an inhabitant of Kholotse who was brought up in Lardo near Tagmacig, and is

likely to clear up many obscure points in the Kesar epic.

Of the works that came to an end the most important is an English translation of the Mārkaṇḍeya Purāṇa by the Hon'ble Mr. Justice F. E. Pargiter. The work was undertaken 20 years ago, and after many interruptions has now come to an end. The conclusion of the editor is that the work was written at two different periods, one some centuries B.C., the other some centuries A D. The scene is laid in Central India amid the wilds of the Vindhyas.

Another is the Kāla Viveka by Jīmūta Vāhana, under the editorship of Paṇḍita Pramatha Nātha Tarkabhūṣaṇa, Professor of Smṛti in the Sanskrit College, Calcutta. In the preface, the editor determines the long unsettled point of the author's era,

which he believes to have been A.D. 1191.

The Tattvārthādhigamasūtra, by Umāsvātī Vācaka, was composed at Pāṭaliputra early in the second century A.D. It is a curious work giving the cosmogony, configuration of the earth and heavens and so on, of the Jains of his day. It was edited by Vakil Keshablal Premchand of Ahmedabad, under the supervision of Professor Hermann Jacobi.

Suddhi Kaumudi by Govindananda Kavi Kankanacarya, under the editorship of a young tol pandit of Bhātpādā, named Kamala Kṛṣṇa Smṛtibhūṣana, has come to an end, practically completing the whole series of Govindananda's work. The series was written between A.D. 1478 and 1535. It was composed for the benefit of the Vaidika brahmanas professing principally the Rg Veda, and

preceded the code of Raghunandana, the standard work of the

Bengal school, by at least half a century.

Professor Dr. W. Caland of Utrecht, Holland, has been obliged to put a stop to his edition of the Srauta Sutra of Baudhayana, after the ninth Prasna, for want of MS. materials.

The Society's stock has been arranged by the Assistant Secretary, and the Cashier is engaged in counting the books and

writing up the stock-book.

On an application from Prof. Louis de la Vallée Poussin, his name was placed on the list of individuals in Europe receiving

the Bibliotheca Indica gratis.

The Council sanctioned the publication in the Bibliotheca Indica of an Index of Place names to the second volume of Col. Jarrett's translation of the Ain-i-Akbari, compiled by Mr. W. Irvine.

Owing to financial difficulties (see Appendix-Accounts) of the Oriental Publication Fund the Council sanctioned Rs. 2,000 from the fund of the Society as an advance to pay off the bills passed for payment and for work already done.

### Search for Sanskrit MSS.

This department published the "Catalogue of Palm leaf and selected paper MSS in the Durbar Library, Nepal," by Mahāmahopādhyāva Haraprasād Shāstri. It gives descriptions of 457 rare and valuable MSS., some of them written in characters of the 7th and 8th centuries. It brings many tantric works to light, and its post-colophon statements have enabled Professor C. Bendall to compile a chronological list of Nepal kings, fuller and more accurate than those hitherto published by him. This Catalogue has been published as an extra number of the "Notices of Sanskrit MSS.

The third volume, in course of publication, will contain notices

of 366 MSS, mostly seen in Benares.

The year has been very fruitful in the collection of MSS., no less than 1,360 having been acquired. Of these about 1,100 are Jain MSS. This, with about 800 Jain MSS., already collected with great industry from various quarters, raises the Government Jain collection to 2,000. The Jaina works are in Sanskrit, Jaina Prakrit, Madwari, Guzerati, Hindi and other languages, and contain works of all classes-stotras, biographies of saints, Angas, commentaries, and so on. The collection brings to light two facts—that the Jainas had tantras, and that they had smrtis of their own and were not dependent on brahmanical smrtis as hitherto supposed.

At the request of His Honour the Lieutenant-Governor of Bengal, ten bound copies of the Notices of Sanskrit MSS., Extra No. of 1905, containing a Catalogue of Palm-leaf and selected paper MSS., belonging to the Durbar Library, Nepal, was presented to the Nepal Durbar, in return for their courtesy to Professor Bendall and Mahamahopadhyaya Haraprasad Shastri, when on their visit

to Nepal in 1898, for the purpose of compiling this work.

In response to an application made by the Society, the Government of India sanctioned a special grant of Rs. 5,000 for the purchase, on behalf of Government, of a valuable collection of Jain MSS.

### Search for Arabic and Persian MSS.

During the year, the search has been conducted by Dr. Ross with great success, and a considerable number of important MSS. acquired. The public have become acquainted with the existence of this search, and offers of valuable MSS. are being received from all parts of India. To meet these opportunities of acquiring really good MSS., the Council has applied to the Government of India for an extra grant of Rs. 5,000. The following first Annual Report for the official year 1904-1905, was submitted to Government by Dr. Ross:—

# Report on the Search for Arabic and Persian MSS, for the Official year 1904-1905.

The work has been of two kinds: (1) Research in existing libraries; (2) Purchase of MSS. offered for sale. In this latter task I had in view the principle of purchasing only rare works and MSS. of ancient date. I have been fortunate enough to find some really good MSS. of early authors, copies of which are not to be found in any of the European libraries, and these have been bought for the Society. I shall notice some of them in the course of my report. The field is still to a great extent unexplored, and we can only gradually discover the obscure corners in which these oriental treasures lie hidden and uncared for. Up till now the search for MSS. has been confined to the town of Lucknow, which was the centre of Muhammadan learning and literature in India after the decline of the Moghul Power.

Lucknow abounds in libraries. Some of them are really firstclass ones, and others, though small by comparison, contain very valuable books. I give below a short account of the libraries

visited during the year.

## I. Maulavi Nasir Hosain's Library.

Maulavi Nasir Hosain is a learned Mujtahed of the Shi'ah community, and his library is located in the Nazim's garden at Lucknow. This library contains some very rare and valuable MSS., including a priceless collection of books on History and Biography of Traditionists, and India should be proud to possess such a library. This library owes its origin to Maulavi Hamid Hosain, the deceased father of Maulavi Nasir Hosain. This is the only library of its kind in Lucknow containing religious books of both Sunuis and Shi'ahs. The books here are arranged in different groups according to the different branches of literature and science. In all there are 22 book-cases containing about 6,000 volumes. There

is unfortunately no proper catalogue of this library. valuable collection of MSS. includes 20 works on the principles of Shi'ah religion known as the Usul. The four books on Hadis, which are considered to be the great authorities of the Shi'ahs, and upon which the Shi'ah doctrine entirely depends, have, in fact, been abridged from 400 books on Hadis, each of which is called Asl. the sources of the four books: (a) Kafi; (b) Man la Yahduruhu-al-Fagih; (c) Tahdib-ul-Ahkam, and (d) Istibsar, are 400 books. of these 400 books about 92 Usuls, 20 are in this library, 12 are in the library of the late Syed Tagi in Lucknow, and 60 are in the library of the late Maulavi Gulshan Ali at Jonepore.

There is a book here named Kitab-ul-Munammag, by Abu Ja'far Muhammad bin Habib Hashimi Baghdadi, died A.H. 245. It is a history of the tribe of Quraish. This unique copy belongs

to the 13th century.

## Library of the late Maulavi Abdul Hai.

This library was founded by the late Maulavi Abdul Hakim, father of Maulavi Abdul Hai. It is now in the possession of Mufti Muhammad Yusuff, the son-in-law of the late Maulavi Abdul Hai. There is a manuscript catalogue in this library in which the books are arranged and classified according to the different subjects they treat of. The number of pamphlets on different subjects that are to be found here is very remarkable. I had a copy of this catalogue made for purposes of reference. This library contains some 4,000 volumes of ancient and modern authors.

## III. Library of Maulavi Abdur Ra'uf.

The real founder of the library is the late Maulavi Abdur-Razzaq, but it is now in the possession of his grandson Maulavi Abdur Ra'uf. The books are better arranged here than in the other two libraries. There is a manuscript catalogue in which books are arranged according to the different subjects they treat

This library contains about a thousand manuscripts, but a few of them only are the production of old authors, and even those are very commonly known and cannot claim to have any rarity.

In this library, however, the works of modern authors, i.e., those authors who flourished after the 8th century Hejira are more numerous than in the other libraries.

The following are the more interesting small libraries of Lucknow:

Library of Nawab Mehdi Hasan.

Library of Meer Agha.

Library of Maulavi Luft-i-Hosain.

As to the purchase of manuscripts, I beg to say that the total number of books bought for the Asiatic Society of Bengal is 113. This comprises books on almost all branches of literature and science. Below I give a list of some of these books with very short descriptions of each:—

1 Qurb ul-Isnad; a book on Imamite Tradition.

Author—Abdullah bin Ja'far bin al Hosain bin Malik bin Jami'-al-Himyari. He was the disciple of Imam Abu Mahammadi-'Askari, and died in A.H. 290. Neither the book nor its author is mentioned by either Brockelmann or Ahlwardt. Dated A.H. 1068.

2. Jami'-ul Iskandarani, a collection of the works of Galen made by the Alexandrians, and translated by Hunain bin Ishaq; for particulars and full information consult Ibn Oseiba, vol. I., pp. 90-92. These interesting pamphlets by Galen deal with different branches of medical science, and in no European library is the

complete collection to be found.

3. Sharh Kashf-ul-Asrar; a commentary by Najmud-Din al Katibi, died A.H. 675, on Kashf-ul-Asrar of Muhammad bin Khunji. Only two copies of the text Kashf-ul-Asrar are known—one in the Escurial Library, and the other in Cairo; but no copy of the commentary is mentioned by either Brockelmann or Ahlwardt. The manuscript bears two seals of the last two kings of Oudh and several other important personages.

4. Kifayat-ul-Asar; a Shi'ah work in praise of the twelve Imams. Dr. Ahlwardt (Berlin catalogue, vol. ix., No. 9675) mentions Ibn-i-Tawus as the author of the book. But the genuine author of the book appears to be 'Ali bin Muhammad bin 'Alial-Qummi.

5. Tafsir Zubdat-al Bayan; a commentary on the Quran by Ahmad bin Muhammad Ardabili, died A.H. 993. (Not mentioned by Brockelmann or Ahlwardt.)

6. Kitab-al-Arba'in; a collection of 40 Imamite Traditions by

Shekih-ush-Shahid Muhammad bin Makki.

7. Shawariq-al-Lamiah; a book on the knowledge of God and his attributes, by Hosain bin Abdus Samadal-Harisi, died A.H.904. (Not mentioned by Brockelmann or Ahlwardt.)

8. Kitab-al-Qaza-wal-Qadr; a book on God's Decree and Destiny, by Sudruddin Shirazi. (The work is not mentioned by

Brockelmann.)

9. Rauzat-ul-'Ulama; a book on theology, by Abu 'Ali Hosain bin Yahya Zandubasti. ("I'here is no mention of this work in Brockelmann)

The following three manuscripts are the most important of all collected in point of age, as the dates mentioned against them will show:—

表面的	사람이 가는 말로 하게 되었다. 그리는 그리가 되어 하는 것은 사람이 되었다면 하다 되었다.	Date	A.H.
1.	As-Sihah of al Jawhari	(Circa	) 450
2.	Sharh-i-Kashful Asrar	` 7 - 7 - 7 ' '	740
	Tangih-ul-Maknun		775

The dates of a large number of manuscripts range from A.H. 800 to 1000.

#### Bardie Chronicles.

At the request of the Government of India, the Society undertook a search for MSS. of Rajput and other bardic chronicles,

similar to the work of Chand Bardai already published by the Society, and as a preliminary to make a inspection of libraries of Rajputana and Gujrat believed to contain such works. For this purpose the Government has sanctioned a grant of Rs. 2,400 to the Society for expenditure during the year. The work will begin as soon as a suitable pundit can be found.

The Report having been read and some copies having been distributed, the Hon. Mr. Justice Asutosh Mukhopadhyaya, Vice-President, addressed the meeting.

### Annual Address, 1905.

During many years past, it has been the established practice for the President of our Society to deliver an address on the occasion of the Annual Meeting. Such addresses have varied widely in scope, but many of them have, from time to time, reviewed the work of the Society, and the progress of literary and scientific research in connection with questions which have engaged the attention of our members. On the present occasion, all of us had hoped to listen to the eloquent words of His Honour the Lieutenant-Governor, and to benefit by his kindly advice and encouragement. But public business of a pressing character has kept him away, and no one, I know, regrets his absence more keenly than His Honour himself does; our rules, however, are unfortunately so inelastic that the dates of our meetings cannot be altered so as to suit the convenience even of our President. It is, therefore, by an accident that I find myself called upon to take the chair this evening, and the time at my disposal since I have had an intimation that I should have to do so, has been so limited as to make it impossible for me to attempt an elaborate review of the work of the Society during the year 1905, and of the progress of the researches in which the Society is interested. I must consequently crave your indulgence for confining my remarks to a few points of special interest and importance.

During the last year, the material prosperity of the Society has been satisfactory, and the number of members on our rolls now exceeds what it has been in recent years. But we have lost, during the year, one of our most distinguished Past Presidents, who was originally one of our life-members and subsequently an Honorary Member. A full account of the scientific work of Dr. W. T. Blanford, who passed away, full of years and honours, on the 23rd June, 1905, is contained in the obituary notice contributed by Mr. Holland, which will be published in our Proceedings; but his services to the Society were so conspicuous that they demand more than a passing reference on the present occasion. He joined the Society in 1859, and the number of papers he had contributed to our Journal and Proceedings between that date and 1883 exceeds seventy. I make a pointed reference to this fact,

because, if the Society is to flourish and maintain its reputation as a learned body, it can only be by the publication of original contributions of its members. The researches of Dr. Blanford related principally to Geology and the cognate branches of natural science, namely, Geography and Zoology, but it must not be supposed that they recorded merely details of observation, for many of them treated of the fundamental principles of Geology and Zoology and are rightly regarded as classical memoirs in the history of those sciences. Reference may specially be made to his remarkable address to the British Association at Montreal in 1884, delivered as President of the Geological section; and his equally important address to the Geological Society of London when he was its President five years later. In the first of these addresses, he demonstrated the truth of Huxley's Theory of Homotaxis, in the descent of isolated faunas and floras, and in the second, he strengthened the theory of land connection in former times in certain cases across what are now broad and deep oceans. These generalisations were the result of inferences drawn from a mass of details indicating the accuracy which always characterized his work. No better illustration of this remarkable accuracy can be mentioned than his Geological maps of the coal-field, which, as Mr. Holland observes, have always been and still are the guide of colliery managers. It is impossible, I think, to estimate too highly the practical utility of these maps in exploring the mineral resources of the country. I do not use, therefore, the language of mere platitude when I say that, by the death of Dr. Blanford, we have lost from our ranks a man remarkable for his scientific attainments and for his contributions to the advancement of science, and that the members of this Society will fail in their duty if they do not raise in his memory a suitable memorial in this hall.

I shall turn now to the work of the members of the Society during the last year, but before I deal with it, some reference is necessary to what appears to me to be the most important event of the year from the point of view of oriental research and scholarship. Members of the Society are no doubt aware that a large number of valuable manuscripts and books were brought from Tibet by the late Tibet Mission, which are now desposited in the British Museum in London. If I am not very much mistaken, the materials thus placed at the disposal of scholars are calculated to throw light upon some of the darkest corners of Indian history and antiquities. That such a result is more than likely will be obvious, if we remember what intimate relation subsisted at one time between Tibet and India, the birthplace of Buddhism, and to what extent the literature of Tibet has been influenced by the literature of India. It is well known that the two chief periods in the history of the literature of Tibet are the period of translations extending roughly from the seventh to the twelfth century of the Christian era, and the period of original composition extending from the thirteenth century to the present times. In the first of these periods the Tibetan monks were principally engaged

in enriching their literature by faithful versions of many of the great books of Sanskrit literature. The course which the secluded monks of Tibet pursued was somewhat similar to what was followed in Rome, when Greek authors were freely copied by the dramatists of the Republic; and in England, when the great translations which form a remarkable monument of English literature were made during the Tudor period. Now it has so happened in the case of Tibetan literature, that although the Sanskrit originals have been, in many instances, lost, in course of time in this country, the translation and in some cases the original itself has survived in Tibet. As one illustration, mention may be made of the Avadana Kalpalata of Kshemendra, no manuscript of which could be traced in this country; indeed, it was supposed to have been lost, but was recovered in Tibet, in original, with a Tibetan version. The publication of this work was undertaken some years ago by our Society, and although some progress has been made, it has remained in abeyance by reason of the death of one of the editors. If one wishes to find a parallel to an incident of this description in the history of modern literary research, one must travel to Egypt, which has given back to Europe some of the most exquisite products of the Greek intellect, the fragments of Bacchylides, the Mimes of Herondas, and the long-lost work of Aristotle on the Constitution of Athens. It is obvious, therefore, that a wider knowledge of Tibetan literature, specially of such portions of it as are translated or mainly founded on Sanskrit literature, must throw considerable light on the latter, either by giving us back books which have been lost in this country or by enabling us to determine with some approach to certainty, the original forms of works which, as they now stand, are believed on good grounds to be full of later interpolations. It has been generally supposed that the literature of Tibet is mainly, if not entirely, Buddhistic; this, however, is erroneous because the Tibetans possess translations of Kalidas's Meghduta, Vararuchi's Satagatha, Rabigupta's Aryakosh, Valmiki's Ramayana, Vyasa's Mahabharat, Chanakya's Nitisastra, Dandi's Kavyadarsha, Panini's Vyakarana, Chandra Vyakarana, Pramanasamuccaya of Dignaga, and various other works including several, the originals of which cannot be traced in this country. It looks, therefore, as if the most profitable course which a serious student of Indian antiquities may pursue is to take himself to the study of Tibetan, and a minute examination of the manuscripts at our disposal, beginning with those which were brought nearly eighty years ago by Mr. Hodgson while Resident at Nepal and ending with those brought last year by the Tibet Mission. Of the manuscripts brought by Mr. Hodgson, those known as the Kangyur, consisting of a hundred volumes, are deposited in our library, while those known as the Tangyur, consisting mainly of non-Buddhistic Sanskrit works and extending over two hundred and twenty-five volumes, were deposited in the India Office, London. Only a small fragment of these has, up to the present moment, been worked through by scholars, and as regards those brought by the Tibet

Mission, they have not yet been completely examined and catalogued. But an inkling of what rich harvest is in store for us may be obtained from one or two recent instances. Thus the Tibetan translation of the logical work of Dignaga, which must be placed in the front rank of works on modern Nyaya, but the original of which is not available in this country, enables us to trace the history of the rise and development of this branch of Hindu Philosophy. I need only refer to the scholarly paper on the subject by Mahamahopadhyaya Satis Chandra Vidyabhusana, published in the November number of our Journal. Another valuable paper from the same learned member which opens the first volume of our new series of Memoirs indicates how additional light may be thrown on the somewhat obscure problem of the progress of Tantricism by an intelligent study of Tibetan scrolls and images. The existence of the Tantra Sastras may thus apparently be traced at least as far back as the 6th century A.D., and the question may ultimately arise whether the credit or discredit of founding that system and its attendant practices may not have to be shared by the Buddhists along with the Brahmins. It would be a mistake, however, to suppose that the only department of knowledge which is likely to be benefited by an examination of Tibetan books and manuscripts is the domain of Sanskrit literature; if from Tibetan sources we are likely to be in a position to determine with some precision the early form of books like the Ramayana and the Mahabharata, there can be no reasonable doubt that a somewhat similar result must follow in the case of Pali literature as well. It has been usually supposed hitherto that no Pali books were ever translated into Tibetan, and that the Tibetan monks confined their attention to versions of Buddhistic works written in Sanskrit. It now turns out, however, that almost the entire Pali Tripitakas are preserved in Tibetan in translation. It is difficult to say whether the translations were made direct from Pali into Tibetan, or, as seems not unlikely, were first translated into Sanskrit and then into Tibetan. The Sanskrit versions, however, are extremely rare. Scholars interested in Pali literature must consequently turn to Tibetan sources to determine to what extent interpolations have been introduced by the Buddhists of Ceylon and Burma into their religious books. Under these circumstances, I trust the case is not put too high in favour of Tibetan studies, when it is maintained that they are likely to open up sources from which considerable light may be expected upon the history of Sanskrit as well as Pali literature.

Amongst the papers published in our Journal and Proceedings and in the new series of Memoirs, there have been several contributed during the last year which may be regarded as of more than average interest and importance. Babu Ganga Mohan Laskar, a young epigraphist of talent who made a special study of the epigraphy and palæography of Northern India as a research scholar under the Government of Bengal, and who has prepared a complete concordance to the Inscriptions of Asoka, contributed a note on four new copper-plate charters of

the Somavansi Kings of Kosala. These charters, written in characters of the 10th century, refer to a dynasty of four kings who reigned for over half a century. They were called Trikalinga Adhipati and their dominions included Tosali, which the writer corrects into Kosala. I am not quite sure that this emendation is well founded; and it has been suggested on good grounds that the place may be Dhauli, near which there is an inscription of Asoka addressed to the officers of Tosali. Babu Monmohan Chakravarti furnished an edition of the Pabanaduta, which was first brought to the notice of the Society in 1898 by Mahamahopadhyaya Haraprasad Sastri. The work appears to have been written by Dhoyika, one of the court poets of Lakshman Sen, the last Hindu King of Bengal. Pandit Yogesa Chandra Sastree discussed the question of the identity of the Prime Minister of the same king, Halayudha, the author of Brahmana Sarvasa. Mahamahopadhyaya Haraprasad Sastri contributed a paper on the history and development of the Nyaya Philosophy, which must be regarded as one of a highly controversial character. It is well known that the Nyaya Sutras, attributed to Gautama or Akshapada, have been studied in this country with the aid of the Vashya, the Vartik and other commentaries by eminent Sankrit writers. Hindu Logic, however, has travelled to China and Japan, and there it has been studied for centuries on somewhat different lines, as the students there start with Dignaga as the last of the great writers on Logic in India. The work of Dignaga was translated into Chinese about the middle of the 7th century by Hiouentsiang; and two of his disciples, one a Chinese and the other a Japanese, wrote great commentaries on it. The history of the introduction of Hindu Logic into China and Japan is a subject of abiding interest, and was examined recently by a distinguished Japanese scholar, Mr. Sugiura, in a thesis presented to the University of Pennsylvania. We have, therefore, from Chinese and Japanese sources, Hindu Logic as it existed in the beginning of the 7th century, and on that foundation Pandit Haraprasad Sastri has set himself to investigate the original form of the Nyaya Sutras. His conclusion is that the work is not homogeneous but consists of three independent treatises on Logic and three independent treatises on Philosophy. He maintains that the system was originally Hindu, dating back to pre-Buddhistic times, that it was modified by an infusion of Buddhistic ideas and subsequently altered again by the Saivas. The question, as I have already indicated, is one of great difficulty, and inferences, when they are drawn largely from internal evidence, have always to be accepted with caution. I trust the problem will engage the attention of other members of the Society, but unfortunately we have none who is qualified to approach the subject with a firsthand knowledge of Chinese, Japanese, and Sanscrit.

Tibetan and Pali Scholarship are well represented in the contributions of Rai Sarat Chandra Das, Bahadur, and Mahamhopadhyaya Satis Chandra Vidyabhusana. The papers contributed by the former cover several centuries of the history of Tibet, and

in addition to an account of the various monasteries in Tibet and the rise of different sects of Buddhism in that country, throw considerable light upon the external history of Tibet in its relations with Mongolia and China. Professor Satis Chandra's papers, to two of which I have already referred, bear testimony to his acquaintance with Pali and Tibetan. His paper on Anurudha Thera, who was born at Kanchi and whose chief work was done at Tanjore and Tinnevelly, shows that Buddhism lingered in the great cities of Southern India as late as the 12th century A.D., and that Pali used to be studied even up to that time. His other paper on Dignaga, to which I have previously referred, enables us to fix the end of the 4th century as the time when that great authority on Indian Logic flourished, and this conclusion agrees substantially with that of Mahamahopadhyaya Haraprasad Sastri, who placed him in the 5th century and varies slightly from the result obtained by the Japanese scholar Takakusu, who, in a powerful article on Vasubandhu, contributed to the Royal Asiatic Society of London last year, fixed the period in the sixth century.

Apart from these papers, which are more or less of a philological character, the number of papers dealing with historical problems has been unusually limited. Mr. Irvine gave us a further instalment of his exhaustive monograph on the Later Moghuls, while Mr. Beveridge brought to light some interesting facts about the Emperor Babar, not mentioned in Abul Fazl and overlooked by Erskine. It must be conceded, however, that the history of the Mahomedan period deserves greater attention at the hands of

our members.

In the department of the physical and natural sciences, we have had ample indication of activity on the part of our members. Botany is represented by further work on the Flora of the Malayan Peninsula by Sir George King and Mr. Gamble. Dr. Annandale's Zoological contributions include papers on Indian snakes describing the additions made to the collection in the Indian Museum, and on the lizards of the Andaman Islands. Chemistry is represented in two interesting papers, one on Sal Ammoniac by Mr. Stapleton, and the other on Alchemical Equipment in the 11th century by Mr. Stapleton and Mr. Azoo. In the first of these papers an attempt is made to carry back the history of Sal Ammoniac through Mahommedan times and to throw light on the primitive conceptions of nature which led to its introduction as an alchemical drug. The paper is of value as illustrating the close relation between animistic theories and the first germs of physical science in the East. The second paper is mainly historical in character and embodies an analysis of an Arabic treatise on Alchemy composed towards the beginning of the 11th century A.D., which shows the great importance attached to weights in chemical operations, seven centuries before the age of Black and Lavoisier. In Geology, we had a valuable note from Mr. Silberrad on the chemical analysis of clay found in Bundelkhand, and an extremely instructive lecture by Mr. Holland on the Kangra Valley earthquake illustrated by a series of lantern slides. Finally, we had

from Major Rogers an important paper on fevers in Dinagepore.

followed by a very suggestive lecture on Calcutta fevers.

In the department of Anthropology, although we have had important contributions to local folklore and ethnology. I am afraid it would be difficult to say that it has aroused as much interest as its nature and importance would justify. In connection with this subject, our Anthropological Secretary, Dr. Annandale, has made an important suggestion which, when it is carried out with the co-operation of our members, will, I trust, promote and popularise its study. The proposal is to publish in our Memoirs a series of papers entitled "Miscellanea Ethnographica" giving illustrations and descriptions of implements, utensils, apparatus, weapons and the like from different parts of India and the neighbouring countries. The scheme is one of great practical importance, because, if realized, it will help to bring together and preserve a mass of scattered knowledge which would otherwise be probably Very little information is available regarding the distribution, uses, and manufacture of the common implements of the people, specially the apparatus used by different tribes and castes in agriculture, hunting and other pursuits of daily life. It is a great mistake to suppose that specimens of these are of value only if they are objects of rarity or artistic workmanship. It is equally erroneous to hold that such specimens are of value only if they are habitually used by primitive races in the lowest scale of civilization. The truth is that these implements of daily life, if properly studied, furnish an excellent guide in the examination of the growth of human intelligence. It is essential therefore that such specimens should be collected, classified and studied, before they disappear in the face of the European or semi-European methods and implements which are fast making their way in many directions. Dr. Annandale has recently given us illustrations of the work which may usefully be taken up in this direction by exhibiting to members of the Society the use of the Blow gun in Southern India and the Malayan Peninsula, and the use of peculiar types of weighing beams in different parts of Asia, closely analogous to what prevails in Europe and is there traceable to Scandinavian influences. The subject is obviously one of great interest and importance, and I trust it may engage the attention of some of our members.

During the last year, the publication of Oriental works and their translations in the series known as the "Bibliotheca Indica" has been carried on with more than usual zeal and activity. As a result, not only has the surplus in this fund been exhausted, Society has found it necessary to contribute temporarily a sum of Rs. 2,000 to meet the expenses for work already done. There will consequently be a reduction in the number of works to be published in the course of the present year, and the Council have decided that, in future, a complete list of the works which may be undertaken in the course of any one session, must be definitely settled and budgetted for in advance. Of the works which have been published during the year in the

"Bibliotheca Indica" an account has been given in the report submitted to you this evening. I would only invite attention to the completion of the English version of the "Markandeya Purana" by Mr. Justice Pargiter. The learned translator has furnished an elaborate introduction in which he shows that the work was composed at two widely distant periods, one probably some centuries before the beginning of the Christian era, and the other some centuries after it. The approaching retirement of Mr. Justice Pargiter cannot fail to be a source of sincere regret to every member of this Society, and the regret is deepened by the fact that there are few, if any, amongst the junior members of the distinguished service to which he belongs, who are qualified to take his place in the field of Oriental scholarship. Another work which was completed during the year and which deserves special mention is the Persian version of Morier's Haji Baba by Shaik Ahmad of Kirman, upon which Major Phillott had been engaged for some time past. It may no doubt be said that in undertaking the publication of this work, the Society has departed from its hitherto invariable practice of publishing only classical Arabic and Persian works. The work, however, furnishes so good an example of modern Persian, and is so truthful a picture of the manners and customs of the people, that its inclusion in our list of publications is amply justified. The value of the edition has been greatly enhanced by the notes of the editor, in which all the slang terms and colloquialisms not found in the dictionaries are lucidly explained.

There are two other topics to which I shall like to invite your attention before I bring my address to a close. During the year which has just ended, considerable progress has been made in the search for Sanskrit manuscripts, as also in the search for Arabic and Persian manuscripts. So far as the search of Sanskrit manuscripts is concerned, which was conducted under the supervision of Mahamahopadhyaya Haraprasad Sastri, the progress of the operations during the year is marked by three important events. The first is the publication of the Catalogue of Palm-leaf and selected paper manuscripts in the Durbar Library in Nepal. The second is the report submitted to Government on the progress of the search during the last five years The third is the acquisition of about twelve hundred Jain manuscripts for which the Government of India made a special grant of Rs. 5,000 to the Society. The Catalogue as also the Report contains valuable information upon Tantric literature, and they have been received with considerable interest by European scholars. The Jain collection has only been recently acquired and has not been yet completely catalogued, but so far as can be judged from the materials at our disposal, even these works may throw some light upon Tantric lore. We have thus accumulated a mass of material which is of the highest value in examining the political and literary condition of Eastern India for several centuries, as also in studying the evolution of the doctrines which lie at the foundation of our Tantras.

As regards the search for Arabic and Persian manuscripts

which was conducted under the supervision of our Philological Secretary, Dr. Ross, the success has been still more remarkable. The total number of manuscripts purchased up to the middle of October last was about seven hundred, and you will be able to appreciate the value of the collection when I tell you that manuscripts of great rarity have been acquired from different parts of India, such as Lucknow, Delhi and Hyderabad, as also from two valuable collections which were brought by two Arabian travellers. The books represent almost every branch of Oriental literature, and as many as eighty of these are unique, giving us works of ancient and modern authors which are not even mentioned in any of the European Catalogues. As regards the age of these manuscripts, a sufficient indication is afforded by the fact that at least a hundred of them range in date between the thirteenth and the fifteenth centuries. Dr. Ross has been able to secure autograph copies of the works of about sixteen authors, some of which bear the original corrections and marginal notes of the authors themselves, while the interest attaching to others is enhanced by the fact that they bear upon them lines from the pen of eminent scholars who flourished during the fourteenth and the fifteenth centuries. Amongst the most important of the additions made to the collection during the year, I may mention specially a work written in the fourteenth century by the Spanish Vizir Lisanuddin, which gives biographical notices of all the Moorish poets of the eighth century of the Mahomedan era. We have also secured an important book on tradition written by Yusoof bin Abdur Rahaman in A.D. 1341, which enumerates all the traditions and sayings of the Arabian Prophet, arranged in such a manner as to indicate at a glance how many traditions have referred to each traditionist. In addition to these we have secured the manuscript of an important work called "Rubab Nama," by the son of Jelaluddin Rumi, the greatest Sufi poet of Persia. When we add to these the valuable history of authors of the sixth century of the Mahomedan era compiled by Ispahani in the beginning of the thirteenth century A.D., we ought to be able to realize the value and the importance of the materials at our disposal. Our first duty is to undertake an examination of this collection and the preparation of proper catalogues. Our next duty would be the publication of some of these unique manuscripts and make them available to scholars all over the world If we neglect the duty which has thus been cast upon us, we may rightly be likened to those unhappy beings who will hoard their wealth and neither use it themselves nor allow others to be benefited by it. From the generous aid which the Government of India has already given to us, we may legitimately expect that the Government will not be slow to render assistance if the work is undertaken and systematically carried on by competent scholars under the supervision of the Society. past history of the Society, however, makes it painfully clear that, while the interests of Sanskrit learning have been carefully watched and nurtured, the interests of Arabic and Persian Literature have, of late years, been sadly neglected. In this department at any rate we have distinctly lost ground since the days of Sprenger and Blochmann; and I trust that under the guidance of Dr. Ross, whose devotion to these studies is well known, a serious effort will now be made to retrieve our reputation in this direction.

I have now given you a brief, and, I am afraid, a very imperfect account of the work done by the Society during the last year, and I have ventured to indicate some of the directions in which research may be profitably carried on. Our illustrious founder defined the bounds of our investigation to be the geographical limits of Asia, and he sought to include within the scope of our enquiries whatever is performed by man or produced by nature. It is manifest that although our Society has been in existence for about a century and a quarter, the field of investigation has been by no means exhausted. True it is that we are no longer in a position to repeat the triumphs of the early years of our existence when Sir William Jones discovered Sanskrit and James Prinsep deciphered the edict of Asoka. Yet the problems in oriental scholarship, both literary and scientific, which still await solution, are so numerous and so fascinating, that I cannot conceive any adequate reason why our Society should ever languish.

The Chairman announced that the scrutineers reported the result of the election of Officers and Members of Council to be as follows:—

#### President.

His Honour Sir A. H. L. Fraser, M.A., LL.D., K.C.S.I.

### Vice-Presidents.

The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., F.R.S.E.

T. H. Holland, Esq., F.G.S., F.R.S. A. Earle, Esq., I.C.S.

## Secretary and Treasurer.

Honorary General Secretary:—J. Macfarlane, Esq. Treasurer:—The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., F.R.S.E.

### Additional Secretaries.

Philological Secretary:—E. D. Ross, Esq., Ph.D.

Natural History Secretary:—I. H. Burkill, Esq., M.A.

Anthropological Secretary:—N. Annandale, Esq., D.Sc.,

C.M.Z.S.

Joint Philological Secretary:—Mahamahopadhyaya Haraprasad Shastri, M.A.

## Other Members of Council.

W. K. Dods, Esq.

H. H. Hayden, Esq., B.A., F.G.S.

E. Thornton, Esq., F.R.I.B.A.

Mahamahopadhyaya Satis Chandra Vidyabhushan, M.A.

Lieut.-Col. D. C. Phillott, 23rd Cavalry F.F.

C. Little, Esq., M.A.

Hari Nath De, Esq., M.A.

Major F. P. Maynard, I.M.S.

J. A. Cunningham, Esq., B.A. Major W. J. Buchanan, I.M.S.

The Meeting was then resolved into the Ordinary General Meeting.

The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., F.R.S.E., Vice-President, in the chair.

The minutes of the last meeting were read and confirmed.

Fifty-five presentations were announced.

It was announced that Mr. M. G. Simpson had expressed a wish to withdraw from the Society.

A vacancy having occurred owing to the death of Dr. W. T. Blanford, the Council recommended the Right Hon'ble Baron Curzon of Kedleston, M.A., D.C.L., F.R.S., for election as an Honorary Member at the next meeting.

For many years before coming to India as Viceroy, Lord Curzon had devoted himself to a large section of the problems which form the special province of this Society. In 1895, he was awarded the Patron's gold medal of the Royal Geographical Society for his great work on the Geography, History, Archæology and political questions of Persia; for journeys of exploration in French Indo-China; and for an expedition to the Hindu Kush, the Pamirs and the Oxus. For many years, like the distinguished scientific man whose lamented death has created a vacancy in our list of Honorary Members, Lord Curzon was a Member of Council and Vice-President of the Geographical Society of which he has been a Fellow since 1888.

He was elected a Fellow of the Royal Society in 1898 before

his departure for India.

Lord Curzon's personal interest in the welfare of this Society, shown on so many occasions, was an expression of his devotion to the questions which it is our main object to study. His address to this Society, at the Annual Meeting in 1899, on the value of ancient historical monuments in the country, found practical expression in his resuscitation of the Archæological Department for the restoration and study of historical marks that would otherwise have been lost.

Of all the distinguished men who have accepted our Honorary Membership, there is none who has been more closely linked with the special problems that form the peculiar province of the original Asiatic Society, and none who would more thoroughly appreciate this opportunity of keeping in touch with the work which he commenced as an independent investigator and continued as Viceroy and Governor-General of India. Lord Curzon's eminence in the world of letters has been recognised by the Hony. Degree of D.C.L. conferred on him by the University in which he had had such a distinguished career before taking up political work.

T. H. HOLLAND.

Mr. C. Russell, Professor, Presidency College, proposed by Mahamahopadhyaya Haraprasad Shastri, seconded by Mr. J. Macfarlane; Babu Girindra Kumar Sen, proposed by Mr. Hari Nath De, seconded by Mr. J. Macfarlane; and The Hon. Mr. C. A. Logan, I.C.S., proposed by Mr. J. Macfarlane, seconded by the Hon. Mr. H. Risley, were ballotted for and elected Ordinary Members.

Mr. H. Hayden gave a lecture on the scenery of Tibet, illustrated by lantern slides.

The following papers were read:--

1. Supplementary note on the Bengal poet Dhoyika and the

Sena Kings. -By Monmohan Chakravarti, M.A.

2. A list of a small collection of Mammals from the plains of the Madura District.—By R. C. Wroughton, with notes by Dr. N. Annandale.

The paper will be published in the Memoirs.

# LIST OF MEMBERS

OF THE

# ASIATIC SOCIETY OF BENGAL.

ON THE 31ST DECEMBER, 1905.

# OF THE ASIATIC SOCIETY OF BENGAL FOR THE YEAR 1905.

### President :

His Honour Sir A. H. L. Fraser, M.A., LL.D., K.C.S.I.

### Vice-Presidents:

The Hon'ble Mr. Justice Asutosh Mukhopadhyaya,
M.A., D.L., F.R.S.E.
T. H. Holland, Esq., F.G.S., F.R.S.
C. W. McMinn, Esq., I.C.S. (retired.)

## Secretary and Treasurer.

Honorary General Secretary: J. Macfarlane, Esq. The Hon'ble Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., F.R.S.E.

## Additional Secretaries.

Philological Secretary: E. D. Ross, Esq., Ph.D.
Natural History Secretary: Major L. Rogers, M.D., B.Sc., I.M.S.
Anthropological Secretary: N. Annandale, Esq., D.Sc., C.M.Z.S.
Joint Philological Secretary: Mahāmāhopādhyāya Haraprasād Shastri, M.A.

## Other Members of Council.

The Hon'ble Mr. Justice F. E. Pargiter, B.A., I.C.S. Kumar Ramessur Maliah.
I. H. Burkill, Esq., M.A.
H. E. Kempthorne, Esq.
W. K. Dods, Esq.
A. Earle, Esq., I.C.S.
Lieut.-Col. J. H. Tull Walsh, I.M.S.
H. H. Hayden, Esq., B.A., F.G.S.
E. Thornton, Esq., F.R.I.B.A.
Mahāmāhopādhyāya, Satis Chandra Vidyabhusana, M.A.
H. E. Stapleton, Esq., B.A., B.Sc.

## LIST OF ORDINARY MEMBERS.

R. = Resident. N.R. = Non-Resident. A. = Absent. N.S. = Non-Subscribing. L.M. = Life Member. F.M. = Foreign Member.

N.B.—Members who have changed their residence since the list was drawn up are requested to give intimation of such a change to the Honorary General Secretary, in order that the necessary alteration may be made in the subsequent edition. Errors or omissions in the following list should also be com-

municated to the Honorary General Secretary.

Members who are about to leave India and do not intend to return are particularly requested to notify to the Honorary General Secretary whether it is their desire to continue Members of the Society; otherwise, in accordance with Rule 40 of the rules, their names will be removed from the list at the expiration of three years from the time of their leaving India.

Date of Election.		
1903 Feb. 4.	R.	Abdul Alim. Calcutta,
1894 Sept. 27.	N.R.	Abdul Wali, Maulavie. Ranchi.
1895 May 1.		Abdus Salam, Maulavie, M.A. Cuttuck.
1903 April 1.	N.R.	Abul Aâs, Maulavie Sayid, Rais and Zemindar.
		Patna.
1901 Aug. 7.	A.	Adams, Margaret. Baptist Zenana Mission. Europe.
1904 Sept. 28.	N.R.	Ahmad Hasain Khan, Munshi. Jhelum.
1888 April 4.	R.	Ahmud, Shams-ul-ulama Maulavie. Cal-
		cutta.
1888 Feb. 1.	R.	Alcock, LieutCol. Alfred William, M.B., LL.D.,
		C.I.E., F.R.S. Calcutta.
1885 Mar. 4.	L.M.	Ali Bilgrami, Sayid, B.A., A.R.S.M., F.G.S. Hyderabad.
1899 Jan. 4.	N.R.	Ali Hussain Khan, Nawab. Lucknow.
1903 Oct. 28.	R.	Allan, Dr. A. S., M.B. Calcutta.
1900 Aug. 1.	R.	Allen, The Hon'ble Mr. C. G. H., I.C.S.
•		Calcutta.
1874 June 3.	A.	Ameer Ali, M.A., C.I.E., Barrister-at-Law.
		Europe.
1893 Aug. 31.	A.	Anderson, Major A. R. S., B.A., M.B., I.M.S.
		Europe.
1884 Sept. 3.	A.	Anderson, J. A. Europe.
1904 Sept. 28.		Annandale, Nelson, D.SC., C.M.Z.S. Calcutta.
1904 Jan. 6.		Ashton, R. P. Calcutta.
1904 July 6.	The second second	Aulad Hasan, Sayid. Dacca.
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1870 Feb. 2.	L.M.	Baden-Powell, Baden Henry, M.A., C.I.E. Europe.

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Date of Election.		
1901 Jan. 2.	A.	Badshah, K. J., B.A., I.C.S. Europe.
1898 Nov. 2.	A.	Bailey, The Revd. Thomas Grahame, M.A., B.D.
1000 1001. 2.	1	Europe.
1891 Mar. 4.	N.R.	Baillie, D. C., I.C.s. Ghazipur.
1898 Aug. 3.	N.R.	Bain, LieutCol. D. S. E., I.M.S. Mercara.
1900 Aug. 29.	1	Baker, The Hon. Mr. E. N., C.S.I., I.C.S.
1000 Hug. 20.	I.C.	Calcutta.
1905 Mar. 1.	R.	Banerjee, Muralidhar. Calcutta.
1896 Mar. 4.	N.R.	Banerji, Satish Chandra, M.A. Allahabad.
1869 Dec. 1.	L.M.	Barker, R. A., M.D. Europe.
1885 Nov. 4.	R.	Barman, Damudar Das. Calcutta.
1877 Jan. 17.	N.R.	Barman, H.H. The Maharaja Radha Kishor
		Dev. Tipperah.
1898 Mar. 2.	N.R.	Barnes, Herbert Charles, i.c.s. Shillong.
1902 May 7.	R.	Bartlett, E. W. J. Calcutta.
1894 Sept. 27.	R.	Basu, Nagendra Natha. Calcutta.
1895 July 3.	L.M.	Beatson-Bell, Nicholas Dodd, B.A., I.C.S
		Europe.
1876 Nov. 15.	F.M.	Beveridge, Henry, I.C.S. (retired). Europe.
1897 Feb. 3.	R.	Bloch, Theodor, PH.D. Calcutta.
1893 Feb. 1.	N.R.	Bodding, The Revd. P. O. Rampore Haut.
1885 Mar. 4.	A.	Bolton, Charles Walter, c.s.i., i.c.s. (retired).
		Europe.
1895 July 3.	N.R.	Bonham-Carter, Norman, I.C.S. Saran.
1890 July 2.	A.	Bonnerjee, Womes Chunder, Barrister-at-Law,
		Middle Temple. Europe.
1897 June 2.	R.	Bose, Annada Prasad, M.A. Hooghly.
1895 Mar. 6.	R.	Bose, Jagadis Chandra, M.A., D.SC., C.I.E.,
		Bengal Education Service. Calcutta.
1880 Nov. 3.	N.R.	Bose, Pramatha Nath, B.Sc., F.G.S. Maurbhanj.
1905 Mar. 1.	N.R.	Bose, Sasi Bhusan. Giridi.
1895 April 3.	F.M.	Bourdillon, Sir James Austin, K.C.S.I., C.S.I.,
		I.C.S. (retired). $Europe$ .
1860 Mar. 7.	L.M.	Brandis, Sir Dietrich, K.C.I.E., PH.D., F.L.S., F.R.S.
3006 35		$\_Europe.$
1905 Mar. 1.	N.R.	Brown, W. B., I.C.S. Comillah.
1901 Sept. 25.	R.	Buchanan, Major W. J., I.M.S. Calcutta.
1887 May 4.	R.	Bural, Nobin Chand, Solicitor. Calcutta.
1901 June 5.	R.	Burkill, I. Henry, M.A. Calcutta.
1896 Jan. 8.	N.R.	Burn, Richard, I.C.S. Simla.
1900 May 2.	N.R.	Butcher, Flora, M.D. Ludhiana.
1904 Aug. 3.	R.	Bythell, Major, W. J., R.E. Calcutta.
1898 Sept. 30.	R.	Cable, The Hon'ble Sir Ernest, Kt. Calcutta.
1901 Jan. 2.	A.	Campbell, Duncan. Europe.
1901 Mar. 6.	N.R.	Campbell, W. E. M., I.C.S. Allahabad.
1895 July 3.	R.	Carlyle, The Hon. Mr. Robert Warrand, C.I.E.,
		1.C.S. Calcutta.
1905 May 3.	$\mathbf{R}$	Chakravarti, Dwarkanath. Calcutta.
	I	

Date of Election	Chakravarti, Man Mohan, M.A., B.L. Deputy
1890 June 4. R.	Chakravaru. Man Monar,
	Magistrate. Howrah. Chakravarti, Vanamali. Calcutta.
1905 July 5. R.	Cl R P I.C.S. Europe.
1901 June 5. A.	
1904 July 6. A.	Charles, A. P., 1.Cs. Hubber. Chaudhuri, A., Barrister-at-Law. Calcutta. Chaudhuri, A., Barrister-at-Law. Calcutta.
1902 Aug. 27. R.	Chaudhuri, A., Barrister-ao Band Chaudhuri, Banawari Lala, B.Sc., Edin. Cal-
1893 Sept. 28. R.	
	cutta. Chunder, Raj Chunder, Attorney-at-Law.
1902 April 2. R.	Ontario-
n n	Grantam W W. M.B., I.M.S.
1905 Aug 2. R.	
1880 Aug. 26. F.M.	
1903 Aug. 26. R.	Stonbon D.D. Dorte Done
TO T I DW	1 Ct 1: The Politiki. Manopo.
1898 June 1. F.M	
1876 Mar. 1. F.M	Crawford, James, B.A., Chinsurah. Crawfurd, Major D. G., I.M.S. Chinsurah.
1901 June 5. R.	Crawfurd, Major D. G., Land. Criper, William Risdon, F.C.S., F.I.C., A.R.S.M.
1887 Aug. 25. R.	1 Interest a
1905 July 7. R.	Canningham . A. Calculla.
1000 0 42-1	I de la
1895 July 3. N.F	
1873 Dec. 3. F.M	f Homes Wallsel Long "or "
1901 Aug. 28. N.I	Das. (fovinda. Benareo.
1901 Aug. 2e. 11905 Jan. 4. R.	Dass. Mucksoodan. Catolitus.
1905 July 7. N.I	
1903 Feb. 4. N.J	
1879 April 7. N.	
1010 Hp1	cial Bank, Illimited. 2 Benaves.
1900 July 4. N.	R. Das, Syam Sunder, B.A. Benares. Das-Gupta, Jogendra Nath, B.A., Barrister-at-
1896 Mar. 4. R	. Das-Gupta, Jogendra 14001,
	Law. Calcutta.  D. Daviendre Nath, M.A., I.C.S. Hooghly.
1904 July 6. N.	R. De, Brajendra Rachar
1904 Sept. 28. N.	
1903 June 3.   1	
	TO L. Dogo Brook K Pishing During
1902 Mar. 5. 1	
1000 1000	R. Deimerick, Charles de Bahadur.
1899 Aug. 30. N	· <del></del>
1000 11200	D Dow Sm Kripamaya Amanga
1905 Aug. 2.   N	Tonatr Manaral. United
7007 T E N	D Dow Nundolal Bhaquipui.
	D Diron R. P. I.C.S. Cherry
1000 1000	D Dode W K. Uateuttu.
1000 0000	R. Doxey, F. Calcutta.  Doxey, F. Calcutta.  R. B.R.A.S., F.R.S.E., F.G.S.
TOOM OUT	R. Doxey, F. Calcutta. R. Doyle, Patrick, C.E., F.R.A.S., F.R.S.E., F.G.S.
.1886 June 2.	( aleatta
1902 Jan. 8.	A. Drummond, J. R., I.C.s. Europe.
1302 0 211. 0.	[2] 아니라는 얼마나 그는 얼마나 이에 나타나를 이 살았다.

Date of Election.		
	100	
1892 Sept. 22.		Drury, Major Francis James, M.B., I.M.S. Europe.
1889 Jan. 2.	A.	Dudgeon, Gerald Cecil, Holta Tea Co., Ld.
		Europe.
1905 April 5.	N.R.	Dunnett, J. M., i.e.s. Lyallpur.
1879 Feb. 5.	F.M.	Duthie, J. F., B.A., F.L.S. Europe.
1892 Jan. 6.	N.R.	Dutt, Gerindra Nath. Hutwa.
1877 Aug. 30.	R.	Dutt, Kedar Nath. Calcutta.
1900 April 4.	A.	Dyson, Major Herbert Jekyl, F.R.C.S., I.M.S.
		Europe.
1900 July 4.	A.	Earle, A., i.c.s. Europe.
1903 Oct. 28.	R.	Edelston, T. D. Calcutta.
1903 May 6.	N.R.	Edwards, Walter Noel. Sootea, Assam.
		Section 1 teles 21001. Sobiett, 21000
1900 Mar. 7.	R.	Fanshawe, Sir Arthur Upton, c.s I., K.C.I E.,
		I.C.S. Galcutta.
1900 Aug. 29.	A.	Fanshawe, The Hon. Mr. H. C., c.s.I., I.c.s.
	1	Europe.
1905 Jan. 4.	R.	Fraser, His Honour Sir Andrew H. L., M.A.,
2000 0000. 10	10.	L.L.D., K.C.S.I. Calcutta.
1901 Mar. 6.	A.	Fergusson, J. C. Europe.
1904 Aug. 3.	R.	Fermor, L. Leigh. Calcutta.
1894 Dec. 5.	A.	Finn, Frank, B.A., F.Z.S. Europe.
1898 Sept. 30.	R.	Firminger, The Revd. Walter K. M.A., Cal-
2000 sept. 50.	1.0.	cutta.
1902 April 2.	N.R.	Fuller, His Honour Sir Joseph Bampfylde,
2002 11pin 2.	11.10.	K.C.S.I. Shillong.
		$\mathbf{a.c.s.i.}$ intromy.
1903 Mar. 4.	R.	Gage, Captain Andrew Thomas, M.A., M.B., B.SC.,
	1.0.	F.L.S., I.M.S. Sibpur.
<b>1</b> 893 Jan. 11.	N.R.	Gait, Edward Albert, I.C.S. Chaibassa.
1899 Aug. 30.	R.	Garth, Dr. H. C. Calcutta.
1902 June 4.	N.R.	Ghuznavi, A. A. Mymensing.
1889 Jan. 2.	R.	
1905 July 7.	R.	Ghose, Jogendra Chandra, M.A., B.L. Calcutia.
recooning	10,	Ghosh, Amulya Charan Vidyabhusana. Cal- cutta.
1902 Feb. 5.	R.	Ghosh, Girish Chunder, Calcutta.
1905 May 3.	N.R.	Ghosh, Hemendra Prasad. Jessore.
1889 Mar. 6.	R.	
1869 Feb. 3.	N.R.	Ghosha, Bhupendra Sri, B.A., B.L. Calcutta.
1861 Feb. 5.	N.S.	Ghosha, Pratapa Chandra, B.A. Vindyachal.
TOOT TED. D.	14.6.	Godwin-Austen, LieutColonel H. H., F.R.S.,
1905 July 7.	N.R.	F.Z.S., F.R.G.S. Europe.
1905 Aug. 2.	N.R.	Goswami, Hem Chandra. Gauhati.
1897 July 7.	A.	Gourlay, Captain C. A., I.M.S. Shillong.
1905 May 2	R.	Grant, Captain J. W., I.M.S. Europe.
1905 May 3. 1876 Nov. 15.	A.	Graves, H. G. Calcutta.
-010 110V. 10.	۱ ^.	Grierson, George Abraham, PH.D., C.I.E., I.C.S.
1900 Dec. 5.	T. 7/	Europe.
1901 Annil 2	N D	Grieve, J. W. A. Kalimpong.
or reprir o.	( TI . IV.	Guha, Abhaya Sankara. Goalpara.

Date of Election.	
1898 June 1. N.R.	Gupta, Bepin Behari. Cuttack.
1000	Gunta, Krishna Govillata, Leisi,
1898 April 6. R.	
1898 Jan. 5. N.R.	Gurdon, Major P. R. T., I.A. Gauhati.
1898 Jan. 5. N.R.	I
OND	
1901 Mar. 6. N.R.	Hair Major Wolseley, I.A. Derar.
1892 Jan. 6. N.R.	1 TT 11
1904 Sept. 28. N.R.	
1899 April 5. A.	Hare, Major E. C., I.M.S. Zhap Hassan Ali Mirza Sir Wala Qadr Sayid,
1884 Mar. 5. L.M.	
	Hayden, H. H., B.A., B.E., F.G.S., Geological
1897 Feb. 3. R.	Common of India. Unionion.
1904 June 1. F.M	
1904 Dec. 7. N.R	Hill, E. G. Anahabata. Hill, Samuel Charles, B.A., B.Sc. Nagpur.
1892 Aug. 3. N.R	Hill, Samuel Charles, Frederick Rudolf, PH.D.,
1872 Dec. 5. A.	Hoernie, Augustus Trons
	Hill, Samuel Charles, B.A., B.Sc. Nagpar. Hoernle, Augustus Frederick Rudolf, PH.D., C.I.E. Europe. Holland, Thomas Henry, A.R.C.S., F.G.S., F.R.S.,
1891 July 1. R.	Holland, Thomas Helity, Altour, Olivector, Geological Survey of India. Calcutta.
	Director, Geological Salvata. [bad.
1898 Feb. 2. R.	
1884 Mar. 5. N.F	I Theorem The Fibil, Mr. Out.
1901 Dec. 4. R.	
1873 Jan. 2. L.M	Hossack, Dr. Hossack, Br. Europe.  Houstoun, G. L., F.G.S., Europe.  Montfort, B.A., I.C.S.
1905 July 7. N.H	
1303 8 44-5	
1890 Dec. 3. N.J	R. Hyde, The Reva. Hemy
	M. Irvine, William, I.c.s. (retired). Europe.
1866 Mar. 7. F.I	M. Irvine, William, Lo.S. (1991)
1903 Sept. 23. A	Ito, C. Europe.
	R. Jackson, A. M. T., I.e.s. Bombay.
1905 Nov. 1. N.	R. Jackson, V. H., M.A. Calcutta.
1904 Jan. 6. F	L. Jackson, V. II., M.R.
	Kempthorne, H. E. Calcutta.
TOOU TENTE	R. Kempthorne, H. B. Konnedy, Pringle, M.A. Mozufferpore.
1882 Mar. 1. N	1 TT
1867 Dec. 4.	King, Sir George, Europe.
	R. Knox, K. N., 1.c.s. Banda.  R. C. Brown William M.A., Bengal Educa-
	R. Knox, K. N., I.C.S. Billiam, M.A., Bengal Educa-
1896 July 1.	A. Kuchier, George tion Service. Europe. Burdwan.
1891 Feb. 4. N	R. Kupper, Raja Dara Bunsenara
	J.R. Lal, Dr. Mannu. Banda.
	- T I Chrom Allalacous
1902 Feb. 5. 1	
1904 Jan. 6.	A. Lal, Panna, M.A., B.so. Europe.
1902 Jan. 8.	A. Lal, Parmeshwara. Europe. Lall, Parmeshwara. Europe. Laman, Charles R. Europe. Laman, Charles R. Europe.
1887 May 4.	L.M. Lanman, Charles R. Europe. R. La Touche, Thomas Henry Digges, B.A., Geolo-
1889 Mar. 6.	R. La Touche, Thomas Hong Touche, gical Survey of India. Calcutta.
	gical Survey of India.

Date of Election	1.	
<b>CATALONIA</b>		
1900 Sep. 1	9. A.	Law, The Hon. Sir Edward F. G., K.C.M.G.
#000 <del>-</del> -	_	c.s.i. Europe.
1902 July 2		
1889 Nov. (		Lee, W. A., F.R.M.S. Calcutta.
1903 July 1	l. N.R.	. Lefroy, Harold Maxwell. Mozufferpur.
1900 May. 2	3. A.	Leistikow, F. R. Europe.
1902 Oct. 29	). R.	Lewes, A. H. Calcutta.
1889 Feb. 6	R.	Little, Charles, M.A., Bengal Education Service Calcutta.
1904 Oct. 31	. R.	Longe, Col. F. B., R.E. Calcutta.
1902 July 2	. R.	Luke, James. Calcutta.
1905 Aug. 2	R.	Lukis, LtCol. C. P., I.M.S. Calcutta.
1869 July 7	. A.	Livell Sin Charles Trans. Calcutta.
-coo bury .	·   A.	Lyall, Sir Charles James, M.A., K.C.S.I., C.I.E.,
1870 April 7	. L.M.	LL.D., I.C.S. (retired). Europe.
zo.o mpin .	. 12.101.	Lyman, B. Smith. Europe.
1896 Mar. 4	N.R.	MacDian Burney
1000 mar. 4	IN.R.	MacBlaine, Frederick, i.c.s. Nadia.
1902 July 2	A.	Macdonald, Dr. William Roy. Europe.
1901 Aug. 7.	R.	Maciariane, John, Librarian, Imperial Library
1000 T 11		Caicutta.
1893 Jan. 11		Maclagan, E. D., M.A., I.C.S. Simla.
1891 Feb. 4.	N.R.	Macpherson, Duncan James, M.A., C.LE. 1.C.S.
7000 1 15 4		Dnaguipur.
1902 April 2.	N.R.	Maddox, Captain R. H., I.M.S. Ranchi.
1893 Aug. 31.	N.R.	Manatha, Purmeshwar Narain. Mozuffernove
1895 Aug. 29.	R.	Manmud Gilani, Shamas-ul-Illama Shaikh
		Valcutta.
1898 Nov. 2.	N.R.	Maitra, Akshaya Kumar, B.A., B.L. Rajshahi.
1889 Jan. 2.	R.	Maliah, Kumar Ramessur. Howrah.
1901 June 5.	R.	Mann, Harold H., B.Sc. Calcutta.
1905 Dec. 6.	R.	Marsden, Edmund, B.A. F.R.G.S. Calcutta
1902 May. 7.	N.R.	Marshall, J. H. Simla.
1903 Aug. 5.	R.	Masoom, Dr. Meerza Mohammad. Calcutta.
1892 April 6.	R.	Maynard, Major F. P., I.M.S. Calcutta.
1905 Aug. 2.	R.	McCay, Captain D., I.M.S. Calcutta.
1901 Aug. 28.	R.	McLeod, Norman. Calcutta.
1899 Feb. 1.	N.R.	McMahon, Major Sir A. H., K.C.I.E., C.S.I., C.I.E.,
		I.A. Quetta.
1899 Mar. 1.	R.	McMinn, C. W., B.A., I.C.S. (retired). Calcutta.
1905 Feb. 1.	R.	Megaw, Captain J. W. D., I.M.S. Calcutta.
1895 July. 3.	N.R.	Melitus, Paul Gregory, C.I.E., I.C.S. Gauhati.
1886 Mar. 3.	L.M.	Metha Rustomica Dhaniall.
		Metha, Rustomjee Dhunjeebhoy, c.i.e. Cal-
1900 Jan. 19.	R.	Michie, Charles. Calcutta.
1884 Nov. 5.		Middlemias C S - C - C
		Middlemiss, C. S., B.A. Geological Survey of India. Calcutta.
1884 Sep. 3.	R.	Miles William House 2 7
1904 April 6.	N.R.	Miles, William Harry. Calcutta.
1898 April 6.	N.R.	Miller, The Hon. Mr. J. O., I.C.S., C.S.I. Nagpur.
1874 May. 6.		ALLIEUS CODUCIE (), of I M S JUNDAMO
may. 0.	T. TAT.	Minchin, F. J. V. Europe.

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Date of Election.	1	
1897 Jan. 6.	N.R.	Misra, Tulsi Ram. Awagarh.
1901 Aug. 28.	R.	Mitra, Kumar Narendra Nath. Calcutta.
1897 Nov. 3.	R.	Mitra, The Hon'ble Mr. Justice Saroda Charan,
1001 1101. 0.	10.	M.A., B.L. Calcutta.
TOOK D. C	73	
1905 Dec. 6.	R.	Mohamed Hossain Khan Midhut. Calcutta.
1901 Aug. 7.	N.R.	Molony, E., I.C.S. Cawnpur.
1895 July 3.	N.R.	Monohan, Francis John, I.C.S. Shillong.
1898 May 4.	R.	Mookerjee, R. N. Calcutta.
1894 June 6.	N.R.	Muhammad Shibli Nomani, Shams-ul-Ulama
		Maulavie. Aligarh.
1904 Jan. 6.	R.	Mukerjee, Harendra Krishna, M.A. Calcutta.
1894 Aug. 30.	R.	Mukerjee, Sib Narayan. Uttarpara.
1900 May 2.	R.	Mukerji, P. B., B.Sc. Calcutta.
1899 Sept. 29.	R.	Mukharji, Jotindra Nath, B.A. Calcutta.
	R.	Mukhopadhyaya, The Hou'ble Mr. Justice Asu-
1886 May 5.	It.	tosh, M.A., D.L., F.R.A.S., F.R.S.E. Calcutta.
1000 D - 7	ъ	Mukhopadhyaya, Panchanana. Calcutta.
1892 Dec. 7.	R.	
1901 April 3.	R.	Mullick, Pramatha Nath. Calcutta.
# C C H T C		NT 11 1 NF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1885 June 3.	N.R.	Naemwoollah, Maulavie, Deputy Magistrate.
		Bijnor.
1904 Dec. 7.	A.	Nathan, R., i.c.s. Europe.
1901 Mar. 6.	N.R.	Nevill, H. R., i.c.s. Naini Tal.
1889 Aug. 29.	L.M.	Nimmo, The Hon'ble Mr. John Duncan.
		Calcutta.
1885 Feb. 4.	N.R.	Nyayaratna, Mahāmāhopādhyāya Mahesa
		Chandra, C.I.E. Benares.
1899 Jan. 7.	A.	O'Brien, P. H., I.C.S. Europe.
1900 Dec. 5.	N.R.	O'Connor, Captain, W. F., R.A. Gyantse.
1905 Nov. 1.	N.R.	O'Mally, L. S. S. Darjeeling.
1880 Dec. 1.	A.	Oldham, R. D., A.R.S.M., F.G.S. Europe.
	N.R.	Ollenbach, A. J. Orissa.
1905 May 3.		Oung, Moung Hla. Calcutta.
1887 July 6.	R.	Oung, moung ma. Catouru.
1001 T 0	NT TO	Danda Pendit Remayatan Bi Tas Wandai
1901 Jan. 2.		Pande, Pandit Ramavatar, B.A., I.C.S. Hardoi.
1880 Aug. 4.	L.M.	Pandia, Pandit Mohanlall Vishnulall, F.T.S.,
		Muttra.
1901 Aug. 28.		Panton, E. B. H., I.c.s. Saran.
1904 Aug. 3.	N.R.	Parasnis, D.B. Satara.
1880 Jan. 7.	R.	Pargiter, The Hon. Mr. Justice Frederick
		Eden, B.A., I.C.S. Calcutta.
1901 June 5.	R.	Parsons, W. Calcutta.
1899 Aug. 2.	N.R.	Peake, C. W., M.A., Bengal Education Service.
		Jalpaiguri.
1873 Aug. 6.	R.	Pedler, The Hon. Sir Alexander, C.I.E., F.R.S.,
,,		Kt., Director of Public Instruction, Bengal.
		Calcutta.
1888 June 6.	T.M	
1000 anne 0.	1.1.11	Law. Rangoon.
	$E_{ij}^{(i)} = \mathbb{R}^{n \times n}$	LACITY. EVENINGOOM.

Date of Electio	n.	
1881 Aug. 2	1	The state of the s
1001 Aug. 28	5. R.	
1877 Amou 1	NT D	Service. Calcutta.
1877 Aug. 1	l. N.R	- M.B. I.M.S.
1000 NT. 0		Bombay.
1889 Nov. 6	8. R.	Phillott, Lieut -Col. D. C., 23rd Cavalry F.F.,
1004 T 1		Secretary Board of Examiners. Calcutta
1904 June 1	. R.	Pilgrim, G. Elleock. Calcutta
1904 Mar. 4.	N.R.	Pim, Arthur W. 108 Thomas
1889 Mar. 6.	Α.	Fram, LieutCol. David. M.A. M.R. LL. D. I.M.
		The true true to the true true true true true true true tru
1000 75		Durope.
1889 Mar. 6.	N.R	Prasad, Hanuman, Raes and Zemindar.
		Chunar.
1880 April 7	. N.R	Rai, Bipina Chandra, B.L. Mymensingh.
1895 Aug. 29	R.	Dad Unandhour lotinda N-11
	4	Barnagar. B.L.
1901 June 5.	N.R.	Rai, Lala Lajpat. Lahore.
1900 April 4.	A.	Raleigh, T. Europe.
1898 Aug. 3.	N.R.	Ram Site v. 16
1905 Jan. 4.	N.R.	Ram, Sita, M.A. Moradabad.
1904 Mar. 4.	F.M.	Rankin, J. T., I.c.s. Dacca.
1890 Mar. 5.		Rapson, E. J. Europe.
TOOO MAIL. O.	R.	Ray, Prafulla Chandra, p.sc., Bengal Educa-
1887 May 4.	TD	cion bervice. Calculto
1001 May 4.	R.	Ray, Prasanna Kumar, D.Sc. (Lond. and
1005 M. o	37.75	1 Deligal Education Service Coloutte
1905 May 3.		Thomas William I de Paris
1884 Mar. 5.	R.	Tuisley, The Hon. Mr. Herbert Hone B.
1000 75		
1903 Mar. 4.	N.R.	Rogers, Charles Gilbert, F.L.S., F.C.H., Indian
7000		Forest Department. Port Blair.
1900 April 4.	R.	Rogers, Major Leonard, M.D., B.SC., M.R.C.P.,
		F.R.C.S., I.M.S. Calcutta.
1900 Aug. 29.	A.	Rose, H. A., I.C.S. Europe.
1901 Dec. 4.	R.	Ross, E. Denison, Ph.D. Calcutta.
1889 June 5.	N.R.	Roy Maharaja Cinianata
1903 July 1.	R.	Roy, Maharaja Girjanath. Dinagepur.
		Roy, Maharaja Jagadindra Nath, Bahadur. Calcutta.
1896 Aug. 27.	A.	Sammon Hall I To I .
1905 Mar. 1.	R.	Samman, Herbert Frederick, I.C.S. Europe.
1899 June 7.	N.R.	Calcutta.
1898 Mar. 2.	N.R.	Sarkar, Chandra Kumar. Kowkanik.
1897 Nov. 3.	R.	Sarkar, Jadu Nath. Bankipore.
1902 Feb. 5.		Saunders, C. Calcutta.
1900 Dec. 5.		Schulten, Dr. C. Calcutta.
1893 Jan. 11.	N.R.	Schwaiger, Imre George. Delhi.
1902 Feb. 5.	11.1VI.	Scindia, His Highness the Maharaja Courties
1005 Ten 4		Con, A. U., I.U.S. Karsharing
1905 Jan 4.	IV.	oen, Sukumar. Calcutta
1901 Aug. 29.	R. I	Sen, Upendranath. Calcutta.

Date of Election.		
1885 April 1.	R.	Sen, Yadu Nath. Calcutta.
	R.	Soth Mesrovh J. Calcutta.
1897 Dec. 1.	N.R	C1 1 Trank: Droged Mirrallium.
1905 May 3.	N. R.	Shan, Kashi Frasat. Intraspers. Sharman, Gulab Shankar Dev, F.T.s. Puch-
1904 Jan. 6.	TA . Tr.	
	ъ	Sastri-Samkhyaratna-Vedatirtha, Pandit Yo-
1900 Mar. 7.	R.	
	-	Shastri, Mahāmāhopādhāya Haraprasād, M.A.
1885 Feb. 4.	R.	Shastri, Mahamanopacha,
		Calcutta.
1902 Dec. 3.	N.R.	Shastri, Harnarain. Delhi.
1902 Mar. 5.	R.	Shastri, Rajendra Chandra, M.A. Calcutta.
1903 April 1.	A.	Shaun, Montague Churchill. Europe.
1900 May 2.	R.	Shrager, Adolphe. Calcutta.
1899 May 3.	N.R.	Silberrad, Chas. A., I.C.S. Banda.
1903 Aug. 26.	N.R.	Simpson, J. Hope, i.e.s. Allahabad.
1904 April 6.	R.	1 Clandon Manrice (Teorge, M.L.E.E.
1904 June 1.	R.	Cimeran Robart Bowell, B.St. Culture
1893 Mar. 1.	1	
1000 mar. 1.		tree Ghaziour.
1902 Sep. 24	R.	Singh, Kumar Birendra Chandra. Calculta.
1902 Sep. 22		G. J. Toolomi Napavan M.A. B.L. Utttuttu
1895 Aug. 29		Cinch The Hon Raia Ooday Pratab. Dinga.
1892 Mar. 2		Singh, H.H. The Maharaja Prabhu Narain,
1889 Aug. 29	. 11.11	Dahadun Renares
1000 1 0	N D	
1892 Aug. 3.	N.R.	Aiothan Outh
<b></b> n	NT D	TT mi Hen Meharaja Bamesii-
1889 Nov. 6	. N.R	
	1	Water, Tr. 1 - Noth Rehadur
1894 Feb. 7	. N.R	Chief of Chhatarpur.
	_	I de la Classifica Narayan (dicultu.
1901 Aug. 7	. R.	
1904 Mar. 4	. N.R	
1894 July 4	l.   N.R	. Dilina, Kuliwai Izasza
		P.O., Agra District.
1897 Jan. (	3. R.	Sirear, Amrita Lal, F.C.S. Calcutta.
1872 Aug.		L. Skreisrud, The Revel.
		Ramnore Haut.
1905 Mar.	L. R	Sorabjee, Cornelia. Calcutta.
1901 Dec.		Spooner, D. Brainerd. Europe.
1904 Sept. 2		R. Stapleton, H. E., B.A., B.Sc. Calcutta.
1898 April		R Stark Herbert A., B.A. Callaca.
1901 Mar.		P   Stobbing E P Denra Dun.
1891 Aug.		- O TE A TITE POSMODELY
1904 June	1. R	
TAOA Sume	,	
1899 Aug.	30. F	C. T.1. D. T. P. Barrister-au-
ross wng.	50.	
1000 A	20 F	M Stonbenson Captain John, I.M.S. Europe.
1900 Aug.	6. N.	
1904 July	G N	R. Stuart, Louis, I.C.S. Orai.
, 1904 Jan.	O. 1 IV.	10. Course, 20 and 10 a

Date	of Election	1.	
1868	June 3.	R.	Tagore, Maharaja Sir Jotendra Mohun, Bahadur, K.C.S.I. <i>Calcutta</i> .
1898	April 6.	R.	Tagore, Maharaja Coomar Sir Prodyat Coo-
1904	July 6.	N.R.	mar, Kt. Calcutta. Talbot, Walter Stanley, 1.c.s. Srinagar, Kashmir.
	July 5.	R.	Tarkabhuṣaṇa, Pramatha Nath. Calcutta.
1893	Aug. 31	. N.R.	Tate, G. P. Quetta.
1878	June 5.	N.R.	Temple, Colonel Sir Richard Carnac, Bart., c.i.e., i.a. Port Blair.
1904	May 4.	N.R.	Thanawala, Framjee Jamasjee. Bombay.
	June 2.	N.R.	Thibaut, Dr. G., Muir Central College.  Allahabad.
1898	Nov. 2.	R.	Thornton, Edward, F.R.I.B.A. Calcutta.
	June 2.	L.M.	Thuillier, LieutGenl. Sir Henry Edward Landor, Kt., c.s.i., f.r.s., r.a. Europe.
1891.	Aug. 27	. N.R.	Thurston, Edgar. Madras.
	June 1.		Tipper, George Howlett, F.G.S. Calcutta.
1861	June 5.	L.M.	Tremlett, James Dyer, M.A., I.C.S. (retired). Europe.
1905 .	Jan. 4.	N.R.	Turner, Frank. Dacca.
1905	Aug. 2.	N.R.	Urwin, Captain J. J., M.B., I.M.S. Calcutta.
1905	July 7.	N.R.	Vaidya, Jain. Jaipur.
1893 1	May 3.	N.R.	Vanja, Raja Ram Chandra. Mayurbhanga, District Balasore.
1898	Feb. 2.	R.	Vasu, Amrita Lal. Calcutta.
1900 /	Aug. 29	. A.	Vaughan, Major J. C., I.M.S., Europe.
	Feb. 5.	N.R.	Venis, Arthur, M.A., Principal, Sanskrit College. Benares.
1902	May 7.	R.	Vidyabhusana, Jogendra Nath Sen. Calcutta.
1905.	July 5.	R.	Vidyabhusana, Rajendranath. Calcutta.
1902.	June 4.	R.	Vidyabhusana, Mahamahopadhyay Satis Chandra, M.A. Calcutta.
1901	Mar. 6.	N.R.	Vogel, J. Ph., PH.D. Lahore.
	Sept. 27		Vost, Major William, I.M.S. Europe.
	Oct. 29		Vredenburg, E. Calcutta.
1901	Aug. 7.	A.	Walker, Dr. T. L. Europe.
	Jan. <b>1</b> 9.	R.	Wallace, David Robb. Calcutta.
	June 5.	R.	Walsh, E. H., I.C.S. Chinsura.
	Nov. 6.	A.	Walsh, Lieut-Col. John Henry Tull, I.M.S. Europe.
1900	April 4.	N.R.	Walton, Captain Herbert James, M.B., F.R.C.S., I.M.S. Bombay.
1001	May 3.	A	Waterhouse, Major-General James. Europe.
TODO			TO SOUTH TO USE THE BUSINESS TO SEE THE SERVER OF THE SERVER SERV
	Dec. 6.		Watson, Edwin Roy, B.A. Calcutta.

Date of Election	
1902 April 2. A.	Wheeler, H., i.c.s. Europe.
1905 Dec. 6. R.	Wilson, James, c.s.i., i.c.s. Calcutta.
1904 Mar. 4. R.	Wood, William Henry Arden, M.A., F.C.S.,
	F.R.G.S. Calcutta.
1900 Dec. 5. R.	Woodman, H. C., I.C.S. Calcutta.
1894 Aug. 30. N.R	. Wright, Henry Nelson, B.A., I.C.S. Unao.
1898 July 6. R.	Wyness, James, c.e. Calcutta.
1905 Mar. 1. R.	Young, Rev. A. Willifer. Calcutta.

## SPECIAL HONORARY CENTENARY MEMBERS.

Date of Election.	
1884 Jan. 15.	Dr. Ernst Hæckel, Professor in the University of Jena.
1884 Jan. 15.	Charles Meldrum, Esq., C.M.G., M.A., LL.D., F.R.A.S., F.R.S. Mauritius.
1884 Jan. 15.	Professor A. H. Sayce, Professor of Comp. Philology. Oxford.
1884 Jan. 15.	Professor Emile Senart, Member of the Institute of France. Paris.

## HONORARY MEMBERS.

Date of Election.	
1848 Feb. 2.	Sir Joseph Dalton Hooker, G.C.S.I., C.B., M.D., D.C.L., LL.D., F.L.S., F.G.S., F.R.G.S., F.R.S. Berkshire.
1879 June 4.	Dr.Albert Günther, M.A., M.D., PH.D., F.Z.S., F.R.S.
1879 June 4.	Dr. Jules Janssen. Paris.
1879 June 4.	Professor P. Regnaud. Lyons.
1881 Dec. 7.	Lord Kelvin, G.C.V.O., D.C.L., LL.D., F.R.S.E., F.R.S. Glasgow.
1883 Feb. 7.	Alfred Russell Wallace, Esq., LL.D., D.C.L., F.L.S., F.Z.S., F.R.S. Dorset.
1894 Mar. 7.	Mahāmāhāpadhyāya Chandra Kanta Tarkalankara.  Calcutta.
1894 Mar. 7.	Professor Theodor Noeldeke. Strassburg.
1895 June 5.	Lord Rayleigh, M.A., D.C.L., D.SC., LL.D., PH.D., F.R.A.S., F.R.S. Witham, Essex.
1895 June 5.	LtGenl. Sir Richard Strachey, R.E., G.C.S.I., LL.D., F.R.G.S., F.G.S., F.L.S., F.R.S. London.
1895 June 5.	Charles H. Tawney, Esq., M.A., C.I.E. London.
1896 Feb. 5.	세계요요. 그렇게 되고 그 그 그 그 그 그 그 그 이 바람이 되는 그 바람이 되는 그 사람들이 그 그 그 그를 하는 것이다.

D.S.C., F.L.S., F.R.S. Cambridge. Professor F. Kielhorn, Ph.D., C.I.E. Göttingen. Professor Charles Rockwell Lanman. Massachusetts U.S.A. Dr. Augustus Frederick Rudolf Hærnle, Ph.D., C.I.E. Oxford. Professor Edwin Ray Lankester, M.A., LL.D., F.R.S. London. Sir George King, K.C.I.E., M.B., LL.D., F.L.S., F.R.S. London. Professor Edward Burnett Tylor, D.C.L., LL.D., F.R.S. Oxford. Professor Edward Suess, P.H.D., For. Mem. R.S Vienna. Professor J. W. Judd, C.B., LL.D., F.R.S. London. Monsieur R. Zeiller. Paris. Professor Heinrich Kern. Leiden. Professor Heinrich Kern. Leiden. Professor Ignaz Goldziher, Budapest. Sir Charles Lyall, M.A., K.C.S.L. London. Sir William Ramsay, Ph.D., (Tüb.) LL. D., SC.D. (Dubl.) F.C.S., F.L.C.		
D.S.C., F.L.S., F.R.S. Cambridge. Professor F. Kielhorn, Ph.D., C.I.E. Göttingen. Professor Charles Rockwell Lanman. Massachusetts U.S.A. Dr. Augustus Frederick Rudolf Hærnle, Ph.D., C.I.E. Oxford. Professor Edwin Ray Lankester, M.A., LL.D., F.R.S. London. Sir George King, K.C.I.E., M.B., LL.D., F.L.S., F.R.S. London. Professor Edward Burnett Tylor, D.C.L., LL.D., F.R.S. Oxford. Professor Edward Suess, P.H.D., For. Mem. R.S Vienna. Professor J. W. Judd, C.B., LL.D., F.R.S. London. Monsieur R. Zeiller. Paris. Professor Heinrich Kern. Leiden. Professor Heinrich Kern. Leiden. Professor Ramkrishna Gopal Bhandarkar, C.I.E. Poona. Professor Ignaz Goldziher, Budapest. Sir Charles Lyall, M.A., K.C.S.I. London. Sir William Ramsay, Ph.D., (Tüb.) LL. D., SC.D. (Dubl.) F.C.S., F.I.C.	Date of Election.	
1896 Feb. 5. 1896 Feb. 5. 1896 Feb. 5. 1899 Feb. 1. 1899 Feb. 1. 1899 Dec. 6. 1899	1896 Feb. 5.	
1896 Feb. 5. Professor Charles Rockwell Lanman. Massachusetts U.S.A.  1899 Feb. 1. Dr. Augustus Frederick Rudolf Hærnle, ph.d., c.l.e. Oxford.  1899 Dec. 6. Professor Edwin Ray Lankester, M.A., LL.D., F.R.s. London.  1899 Dec. 6. Sir George King, K.C.I.E., M.B., LL.D., F.L.S., F.R.s London.  1899 Dec. 6. Professor Edward Burnett Tylor, D.C.L., LL.D., F.R.s. Oxford.  1899 Dec. 6. Professor Edward Suess, p.H.D., For. Mem. R.s Vienna.  1901 Mar. 6. Professor J. W. Judd, C.B., LL.D., F.R.s. London.  1902 Nov. 5. Monsieur R. Zeiller. Paris.  1904 Mar. 2. Professor Heinrich Kern. Leiden.  1904 Mar. 2. Professor Ramkrishna Gopal Bhandarkar, C.I.E. Poona.  1904 Mar. 2. Professor Ignaz Goldziher, Budapest.  Sir Charles Lyall, M.A., K.C.S.L. London.  Sir William Ramsay, Ph.D., (Tüb.) LL. D., SC.D. (Dubl.)  F.C.S., F.L.C.	1896 Feb. 5.	
<ul> <li>1899 Dec. 6.</li> <li>1901 Mar. 6.</li> <li>1902 Nov. 5.</li> <li>1904 Mar. 2.</li> <li>1905 Mar. 3.</li> <li>1906 Mar. 4.</li> <li>1907 Mar. 4.</li> <li>1908 Mar. 5.</li> <li>1908 Mar. 6.&lt;</li></ul>		Professor Charles Rockwell Lanman. Massachusetts.
London.  Sir George King, K.C.I.E., M.B., LL.D., F.L.S., F.R.S London.  1899 Dec. 6.  Professor Edward Burnett Tylor, D.C.L., LL.D., F.R.S. Oxford.  Professor Edward Suess, P.H.D., For. Mem. R.S Vienna.  1901 Mar. 6. 1902 Nov. 5. 1904 Mar. 2. 1905 Sir Charles Lyall, M.A., K.C.S.I. London. Sir William Ramsay, PH.D., (Tüb.) LL. D., SC.D. (Dubl.) F.C.S., F.I.C.	1899 Feb. 1.	
London. Professor Edward Burnett Tylor, D.C.L., LL.D., F.R.S Oxford.  1899 Dec. 6. Professor Edward Suess, P.H.D., For. Mem. R.S Vienna. Professor J. W. Judd, C.B., LL.D., F.R.S. London. Monsieur R. Zeiller. Paris. Professor Heinrich Kern. Leiden. Professor Ramkrishna Gopal Bhandarkar, C.I.E. Poona. Professor M. J. DeGoeje. Leiden. Professor Ignaz Goldziher, Budapest. Sir Charles Lyall, M.A., K.C.S.L. London. Sir William Ramsay, PH.D., (Tüb.) LL. D., SC.D. (Dubl.) F.C.S., F.L.C.	1899 Dec. 6.	London.
Oxford. Professor Edward Suess, P.H.D., For. Mem. R.S. Vienna.  Professor J. W. Judd, C.B., LL.D., F.R.S. London. Monsieur R. Zeiller. Paris. Professor Heinrich Kern. Leiden. Professor Ramkrishna Gopal Bhandarkar, C.L.E. Poona.  Professor M. J. DeGoeje. Leiden. Professor Ignaz Goldziher, Budapest. Sir Charles Lyall, M.A., K.C.S.L. London. Sir William Ramsay, PH.D., (Tüb.) LL. D., SC.D. (Dubl.) F.C.S., F.L.C.	1899 Dec. 6.	
<ul> <li>Vienna.</li> <li>Professor J. W. Judd, c.B., Ll.D., F.R.S. London.</li> <li>Monsieur R. Zeiller. Paris.</li> <li>Professor Heinrich Kern. Leiden.</li> <li>Professor Ramkrishna Gopal Bhandarkar, c.l.e. Poona.</li> <li>Professor M. J. DeGoeje. Leiden.</li> <li>Professor Ignaz Goldziher, Budapest.</li> <li>Sir Charles Lyall, M.A., K.C.S.L. London.</li> <li>Sir William Ramsay, Ph.D., (Tüb.) Ll. D., SC.D. (Dubl.)</li> <li>F.C.S., F.L.C.</li> </ul>	1899 Dec. 6.	Professor Edward Burnett Tylor, D.C.L., LL.D., F.R.S. Oxford.
<ol> <li>Nov. 5. Monsieur R. Zeiller. Paris.</li> <li>1904 Mar. 2. Professor Heinrich Kern. Leiden.</li> <li>1904 Mar. 2. Professor Ramkrishna Gopal Bhandarkar, c.i.e. Poona.</li> <li>1904 Mar. 2. Professor M. J. DeGoeje. Leiden.</li> <li>1904 Mar. 2. Sir Charles Lyall, M.A., K.C.S.I. London.</li> <li>Sir William Ramsay, PH.D., (Tüb.) LL. D., SC.D. (Dubl.)</li> <li>F.C.S., F.I.C.</li> </ol>	1899 Dec. 6.	Professor Edward Suess, P.H.D., For. Mem. R.S.
<ol> <li>Nov. 5. Monsieur R. Zeiller. Paris.</li> <li>1904 Mar. 2. Professor Heinrich Kern. Leiden.</li> <li>1904 Mar. 2. Professor Ramkrishna Gopal Bhandarkar, c.i.e. Poona.</li> <li>1904 Mar. 2. Professor M. J. DeGoeje. Leiden.</li> <li>1904 Mar. 2. Sir Charles Lyall, M.A., K.C.S.I. London.</li> <li>Sir William Ramsay, PH.D., (Tüb.) LL. D., SC.D. (Dubl.)</li> <li>F.C.S., F.I.C.</li> </ol>	1901 Mar. 6.	Professor J. W. Judd, C.B., LL.D., F.R.S. London.
<ol> <li>Professor Ramkrishna Gopal Bhandarkar, c.i.e. Poona.</li> <li>Professor M. J. DeGoeje. Leiden.</li> <li>Professor Ignaz Goldziher, Budapest.</li> <li>Sir Charles Lyall, M.A., K.C.S.I. London.</li> <li>Sir William Ramsay, Ph.D., (Tüb.) LL. D., SC.D. (Dubl.)</li> <li>F.C.S., F.I.C.</li> </ol>	1902 Nov. 5.	Monsieur R. Zeiller. Paris.
<ol> <li>Professor Ramkrishna Gopal Bhandarkar, c.i.e. Poona.</li> <li>Professor M. J. DeGoeje. Leiden.</li> <li>Professor Ignaz Goldziher, Budapest.</li> <li>Sir Charles Lyall, M.A., K.C.S.I. London.</li> <li>Sir William Ramsay, Ph.D., (Tüb.) LL. D., SC.D. (Dubl.)</li> <li>F.C.S., F.I.C.</li> </ol>	1904 Mar. 2.	Professor Heinrich Kern. Leiden.
<ol> <li>Mar. 2. Professor Ignaz Goldziher, Budapest.</li> <li>Mar. 2. Sir Charles Lyall, M.A., K.C.S.I. London.</li> <li>Sir William Ramsay, PH.D., (Tüb.) LL. D., SC.D. (Dubl.)</li> <li>F.C.S., F.I.C.</li> </ol>	1904 Mar. 2.	Professor Ramkrishna Gopal Bhandarkar, C.I.E.
<ol> <li>Mar. 2. Professor Ignaz Goldziher, Budapest.</li> <li>Sir Charles Lyall, M.A., K.C.S.I. London.</li> <li>Sir William Ramsay, Ph.D., (Tüb.) LL. D., SC.D. (Dubl.)</li> <li>F.C.S., F.I.C.</li> </ol>	1904 Mar. 2.	Professor M. J. DeGoeje. Leiden.
1904 Mar. 2. Sir Charles Lyall, M.A., K.C.S.I. London. 1904 Mar. 2. Sir William Ramsay, Ph.D., (Tüb.) LL. D., SC.D. (Dubl.) F.C.S., F.I.C.	1904 Mar. 2.	Professor Ignaz Goldziher, Budapest.
1904 Mar. 2. Sir William Ramsay, Ph.D., (Tüb.) LL. D., sc.D. (Dubl.) F.c.s., F.L.c.	1904 Mar. 2.	Sir Charles Lyall, M.A., K.C.S.I. London.
1904 July 2. Dr. George Abraham Grierson, Ph.D. C.F. 108		Sir William Ramsay, Ph.D., (Tüb.) LL. P., Sc.D. (Dubl.)
London.	1904 July 2.	Dr. George Abraham Grierson, Ph.D., C.I.E., I.C.S. London.

# ASSOCIATE MEMBERS.

Date of Election.	
1874 April 1.	The Revd. E. Lafont, c.i.e., s.i. Calcutta.
1875 Dec. 1.	The Revd. J. D. Bate, M.R.A.S. Kent.
1875 Dec. 1.	Maulavie Abdul Hai. Calcutta.
1882 June 7.	Herbert, Giles, Esq. Europe.
1884 Aug. 6.	F. Moore, Esq., f.L.s. Surrey.
1885 Dec. 2.	Dr. A. Führer, Europe.
1886 Dec. 1.	Rai Bahadur Sarat Chandra Das, c.i.e. Calcutta.
1892 April 6.	Pandit Satya Vrata Samasrami. Calcutta.
1892 Dec. 7.	Professor P. J. Brühl. Sibpur.
1899 April 5.	Rai Bahadur Ram Brahma Sanyal. Calcutta.
1899 April 5.	Pandit Visnu Prasad Raj Bhandari. Nepal.
1899 Nov. 1.	The Revd. E. Francotte, s.j. Calcutta.
1902 June 4.	The Revd. A. H. Francke. Leh.

### LIST OF MEMBERS WHO HAVE BEEN ABSENT FROM INDIA THREE YEARS AND UPWARDS.\*

\* Rule 40.—After the lapse of three years from the date of a member leaving India, if no intimation of his wishes shall in the interval have been received by the Society, his name shall be removed from the List of Members.

The following members will be removed from the next Member List of the Society under the operation of the above Rule:—

Womes Chunder Bonnerjee, Esq., Barrister-at-Law. Frank Finn, Esq., B.A., F.Z.S. Dr. T. L. Walker. Major-General James Waterhouse.

### LOSS OF MEMBERS DURING 1904.

### BY RETIREMENT.

Edward Charles Stewart Baker, Esq. J. Bathgate, Esq. Major A. H. Bingley, I.A. Major E. Harold Brown, M.D., 1.M.S. Dr. Arnold Caddy. Francis Joseph Ede, Esq., C.E., A.M.I.C.E., F.G.S. Captain Stuart Godfrey, I.A. R. O. Lees, Esq. Charles Richardson Marriott, Esq., I.C.S. William Stevenson Meyer, Esq., 1 c.s. Rai Lukshmi Sanker Misra, Bahadur. L. F. Morshead, Esq., i.c.s. John Nicoll, Esq. Dr. Frederic H. Norvill. Birendra Chandra Sen, Esq., 1 c.s. A. Tocher, Esq. The Hon. Mr. Justice John George Woodroffe. Lieut.-Col. H. F. S. Ramsden, I.A.

### By DEATH.

### Ordinary Members.

Dr. William Thomas Blanford, LL.D., F.R.S. (Life Member.) Raja Jaykrishna Das, Bahadur. H. W. Peal, Esq., F.E.S.

## Honorary Member.

Dr. William Thomas Blanford, LL.D., F.R.S.

By REMOVAL.

Under Rule 9.

J. deGrey Downing, Esq. Pandit Navakanta Kavibhusana.

Under Rule 38.

Robert Greenhill Black, Esq. Babu Jaladhi Chundra Mukerjee. Babu Ramani Mohon Mullick.

Under Rule 40.

Edwin Max Konstam, Esq. Michael Francis O'Dwyer, Esq., B.A., I.C.S. Alfred Fredrick Steinberg, Esq., I.C.S. [APPENDIX.]

### ABSTRACT STATEMENTS

OF

### RECEIPTS AND DISBURSEMENTS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR

THE YEAR 1905.

# Asiatic Society

D	r	
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		To ESTABLE	SHMENT.						
				Rs.	As.	P.	Rs.	As.	P.
Salaries				3,810	12	6			
Commission				456		6			
Pension	•••	•••	•••	204	0	0			
remaion	***		De-14	-			4,471	9	0
		To CONTIN	GENCIES.						
Stationery	***	***	1**	67	3	6			
Taxes	***	•••	***	884	4	0			
Postage	****	•••	***	538		- 0			
Freight	***	***	***	160	0	- 6			
Meeting	•••	***		122		9			
Auditor's fee	***	***	•••	100	0	0			
Electric Fans and	Lights	••	***	228	5	0			
Insurance fee			4.4	312	- 8	0			
Petty repairs	***		***	26	6	6			
Building		•••		1,265	0	0			
Miscellaneous		•••		528	12	0			
MIDCOILLACORD			*********				4,234	3	3
	То І	IBRARY AND	COLLEC	TIONS.					
Books				2,232	9	4			
		***	***	1,207		0			
Binding	•••	***	***	177	0	0			
Catalogue	landina ot	han ammamdit	***						
Picture Frame, inc	luding of	•		3,313	2	6			
Furniture	•••	•••	•••	319	11	6			1.57
		To Public.	ATIONS.				7,250	1	4
Journal, Part I.	•••	•••		1,791		0			
Do. " II.	•••		•••	1,549	1	6			
Do. " III.	•••	•••		590		3			
Proceedings	•••	***		422		0			
Journal, Proceedin	gs, and M	lemoirs	***	1,377	14	6			
			* -			_	5,732	1	3
To printing char	ges of	Circulars, R	eceipt						
Forms, &c.			•••			1.	286	11	9
" Personal Accou	nt (Write	s off and mis	scella-						
neous)	•••	•••	•••	•••			765	8	9
	То Ех	TRAORDINARY	EXPEN	DITURE	ì.				
Royal Society's Sc	ientific C	atalogue					1 507	7 =	0
Lioyal Society 8 So		Balance	***	•••			1,597		0
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## No. 1.

# of Bengal.

1905.

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				Da l	la D	Rs.	A . T	
By Balance from la	st report		•••	165. 1	18. 1.	1,92,939		5
		By Cash R	ECEIPTS.					
Publications sold for Interest on Investr		***		933				
		o anomal da	•••	6,891	8 0		100	
Rent of room on the Allowance from Go	overnmen	t of Bengal f	or the	550	U, C			
Publication of A		400	_	0.000	· 6 · 7			
subjects Allowance from G	ovovnosov		D	2,000	0 (	,		
gal and Assam		ir or mastern	Den-	1,000	6 6			
Miscellaneous		•••	•••	422				
Dibbonancoas	•••	•••	•••			- 11.797	10	á
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	Вч	EXTRAORDIN.	ARY REC	EIPTS.				
Subscriptions to	Royal	Society's Sci	entific					
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01201105410			• • • • • • • • • • • • • • • • • • • •			1,101		Ē
		By Personal	Accou	NT.				
Admission fees				1,200	0	0		
Subscriptions	•••	•••	•••	9,240		0		
Sales on credit	• • • • • • • • • • • • • • • • • • • •		•••	809		Ď		
Miscellaneous	•••		• • •		10			

TOTAL Rs.

2,17,481 4 1

ASUTOSH MURHOPADHYAY,

Honorary Treasurer,
Asiatic Society of Bengal.

### STATEMENT

# 1905. Oriental Publication Fund in Acct.

### Dr.

To	CASH	EXPENDITURE.
10	Unon	THAT BUNDATORS,

				Rs.	As.	Ρ.	Rs.	As.	P.
Salaries	•••	• • •		1,654	5	3			
Commission on collec	tions		***	52	10	9			
Editing charges			•••	6,149	8	0			
Postage		•••	***	318	13	0			
Freight		•••		32	5	0			
Printing charges			•••	7,081	2	0			
Stationery		•••		28	0	6			
Contingencies				419	3	9			
					-		15,736	0	3
To Personal Account	(Writes	off and Mi	scella-						
neous)							44	14	0
, , , , , , , , , , , , , , , , , , , ,		alance	•••				3,174	9	9
		ToT	AL Rs.			-	18,955	8	0
						11 _			

### STATEMENT

# 1905. Sanskrit Manuscript Fund in Acct.

### Dr.

#### TO CASH EXPENDITURE.

		Rs. As. P.	Rs. As.	P.
Salaries		1,184 0 0		
Travelling charges		320 15 0		
Printing		2,045 12 0		
Postage		103 11 0		
Contingencies	•••	12 8 0		
Purchase of Manuscripts		5,000 0 0		
엄마() 살다면 다른 기교에 그 있었다.			8,666 14	0
Balance	•••		3,120 2	5
도로 회사를 통해 중 중 하는 데 그 일을 가는 만 있다.	TOTAL Rs.		11,787 0	5

### No. 2.

# with the Asiatic Society of Bengal. 1905.

	Cr	•						
			Rs.	As.	Р.	Rs.	As.	. P
By Balance from last Report	***	•••	• • • • • • • • • • • • • • • • • • • •			5,097	1	3
Ву	CASH RI	ECEIPTS	<b>.</b>		•			
Government Allowance Publications sold for cash Advances recovered Loan from Asiatic Society of Be	 engal	•••	9,000 822 90 2,000	0 9 14 0	0 9 0 0	11,913	7	9
Dv T	PERSONAL	A GOOT	NID					
Sales on credit		ACCUU.				1,944	15	0
	Tora	ь Rs.				18,955	8	0
N. O	Asur	osh M	Conorary	Tre	asur	rer, ty of Ber	igal	
No. 3. with the Asiatic		<b>H</b>	lonorary <b>A</b> siat	Tre	asur lo <b>ci</b> e	ty of Ber		
		<b>H</b>	lonorary <b>A</b> siat	Tre	asur lo <b>ci</b> e	ty of Ber		
	Societ	<b>H</b>	lonorary <b>A</b> siat	Tre	asur locie	ty of Ber	902	5.
with the Asiatic	Societ	— ty oj	f Be	Tre	asur locie	ty of Ber	902	5. - P.
with the Asiatic	Societ Cr.	— ty oj	f Be	Tre	asur locie	ty of Ber	902	5. P. 5
By Balance from last Report  By Government Allowance Do. Do. special Publications sold for cash	Societ Cr Cash Re	 ceipts.	Rs. A 3,200 5,000 5	ngo.	ocie 601 601 601 601 601 601 601 601 601 601	ty of Ber 2. 19 Rs. A 3,578	100 é	5. P. 5
By Balance from last Report  By Government Allowance Do. Do. special Publications sold for cash	Societ Cr Cash Re	 ceipts.	Rs. A 3,200 5,000 5	ngo.	ocie 601 601 601 601 601 601 601 601 601 601	ty of Ber 2. 19 Rs. A 3,578	100 é	5. P. 5

ASUTOSH MUKHOPADHYAY,

Honorary Treasurer,

Asiatic Society of Bengal.

### STATEMENT

### 1905. Arabic and Persian MSS. Fund in

#### Dr.

#### TO CASH EXPENDITURE.

			Rs. As.	P.	Rs.	As.	P.
Salaries Purchase of Manuscripts	•••	***	1,885 1 6,258 4	0			
Stationery Contingencies Postage	***	•••	17 14 64 15 13 12	6 9 6			
Travelling charges			666 9	ŏ	8,906	8	9
	Balance	•••	•••	_	4,459	0	0
	Тот	AL Rs.	•••		13,365	8	9

### STATEMENT

### 1905. Bardic Chronicles MSS. Fund in

### Dr.

	Rs	s. As. P. R	s. As. P.
To Balance		2,	400 O O
	TOTAL Rs.	2,	400 0 0

### No. 4.

### Acct. with the Asiatic Soc. of Bengal. 1905.

### Cr.

Rs. As. P. By Balance from last Report ... ...

Rs. As. P. 6.365 8 9

BY CASH RECEIPTS.

Government Allowance

7,000 0 0

TOTAL RS.

13,365 8 6

ASUTOSH MUKHOPADHYAY,

Honorary Treasurer,

Asiatic Society of Bengal.

### No. 5.

# Acct. with the Asiatic Soc. of Bengal. 1905.

#### Cr.

By CASH RECEIPTS.

Government Allowance

Rs. As. P. Rs. As. P. 2,400 0 0

TOTAL Rs.

2,400 0 0

ASUTOSH MUKHOPADHYAY,

Honorary Treasurer,

Asiatic Society of Bengal.

### STATEMENT

## 1905.

## Personal

	Dr						
			Rs. As. I	٠,	Rs. A	s.	P.
To Balance from last Report	•••	•••	•••		4,963	0	10
Advances for purchase of Manu	ascripts, d	zc	***	_	5,551	8	9
To Asiatic Society	****	•••		9			
" Oriental Publication Fund " Sanskrit Manuscript Fund	•••			0			
				<del>-</del> .	13,212	5	9

# No. 6

# Account.

1905.

Loodwice							
a Disciple				Cı	? <b>.</b>		Rs. As. P. Rs. As. P. 13,783 14 9
By Cash Receipts ,, Asiatic Societ ,, Oriental Publ		r Fur	nd	•••			765 8 9 44 14 0 810 6 9
By Balance.		to tl		Due So	by the	ie	
Members Subscribers Employès	Rs. 7,153 19 30	As. 7 8 0	P. 9 0 0	Rs. 202  100	As 5 	P. 5  0	
Oriental Publication Fund Miscellaneous	2,000 416		0 6	184	13		
	9,619	12	3	487	2	5	9,132 9 1

TOTAL Rs.

23,726 15 4

ASUTOSH MUKHOPADHYAY,

Honorary Treasurer,

Asiatic Society of Bengal.

### STATEMENT

1905.

Invest-

### Dr.

	- A - D						
		Val	ue.		Cost	<b>ե.</b>	
		Rs.	As.	P,	Rs.	As.	P.
To Balance from last Report	•••	1,98,300	0	0	1,97,958 6	3	2 6
TOTAL Rs		1,98,300	0	0	1,97,964	6	8

	PERMA	NENT.	Темро				
Funds.	Value.	Cost.	Value.	Cost.	Total Cost.		
Asiatic Society Trust Fund	Rs. A P. 1,49,800 0 0 0 0 1,51,200 0 0	1,339 6 0		Rs. 45,293 6 5 45,293 6 5	1,94,636 13 1		

### STATEMENT

1905.

Trust

	Rs.	As, P.
To Pension Balance		0 0 11 10
TOTAL Rs	1,504	11 10

### No. 7.

### ment.

1905.

u ·	30	

	OI.								
			Val	ue.		Cos	t.		
			Rs.	As.	P.	Rs.	As.	P.	.1
By Cash ,, Balance	000		2,000			1,988 1,95,976			
,, Databoo		•		-		1,97,964			

#### ASUTOSH MUKHOPADHYAY,

Honorary Treasurer,
Asiatic Society of Bengal.

No. 8.

### Fund.

1905.

하는 마음이 아무리 아이들의 그런 그렇게 바다를 가는 하나 나라 없다. 나			þ
지사를 하는 학교에도 그 이 작은 전 이 사람이 하는 학교에도 이 사고도 있다.	Rs.	As. P.	
By Balance from last Report	1,455	11 10	
"Interest on Investment	49	0 0	
Total Rs	1,504	11 10	

ASUTOSH MUKHOPADHYAY,

. Honorary Treasurer,

Asiatic Society of Bengal.

### STATEMENT

1905.

Cash

	Dr							
						Rs.	As.	P.
To Balance from last Report	•••	•••	***			6,514	9	8
	RECEIP	тв.						
			Rs.	As.	P.			
To Asiatic Society ,, Oriential Publication Fund ,, Sanskrit Manuscript Fund ,, Arabic and Persian Manusc ,, Bardic Chronicles Manuscr	ript Fund	•••	13,278 11,913 8,205 7,000 2,400	7	11 9 0 0			
"Personal Account "Investment "Trust Fund		***	13,783 1,988 49	14 3 0	9 7 0	58,618	0	0
	TOTAL Rs.	***	•••			65,132	9	8

### STATEMENT

1905.

Balance

### Dr.

	Rs.	As. P.	Rs.	As. P.
To Cash	. 2,644	12 10		
" Personal Account		9 10		
"Investment	1,95,976			
			2,07,753	9 9
Government Pro. Note at Bank of Bengal'	8			
Safe Custody Account Cashier's Securit	У			
Deposit Rs. 500				
경향 불통하는 경우 이 회사가 하고 하는 것도 없다. 이글로			-	
TOTAL R	s		2,07,753	9 9

We have examined the above Balance Sheet and the appended detailed Accounts with the Books and vouchers presented to us, and certify that it is in accordance therewith, correctly setting forth the position of the Society as at the 31st December, 1905.

CALCUTTA, 15th February, 1906. MEUGENS, KING AND SIMSON,

Chartered Accountants.

### Account.

1905.

### Cr.

_						
Ex	D	ET AT	'n	TT	TID	77

			Rs.	As.	Ρ.	$\mathbf{R}_{\mathbf{S}_{\bullet}}$	As.	. P.
By Asiatic Society	•••		23,572	9	7			
"Oriental Publication F	und		15,736	0	3			
" Sanskrit Manuscript I	Fund		8,666	14	0			
" Arabic and Persian Ma	anuscript Fund		8,906	8	9			
" Personal Account	•		5,551	8	9			
"Investment		***	6	3	6			
" Trust Fund			48	0	0			
						62,48	7 12	10

Balance

2,644 12 10

TOTAL Rs.

65,132 9 8

#### ASUTOSH MURHOPADHYAY,

Honorary Treasurer,

Asiatic Society of Bengal.

No. 10.

Sheet.

1905.

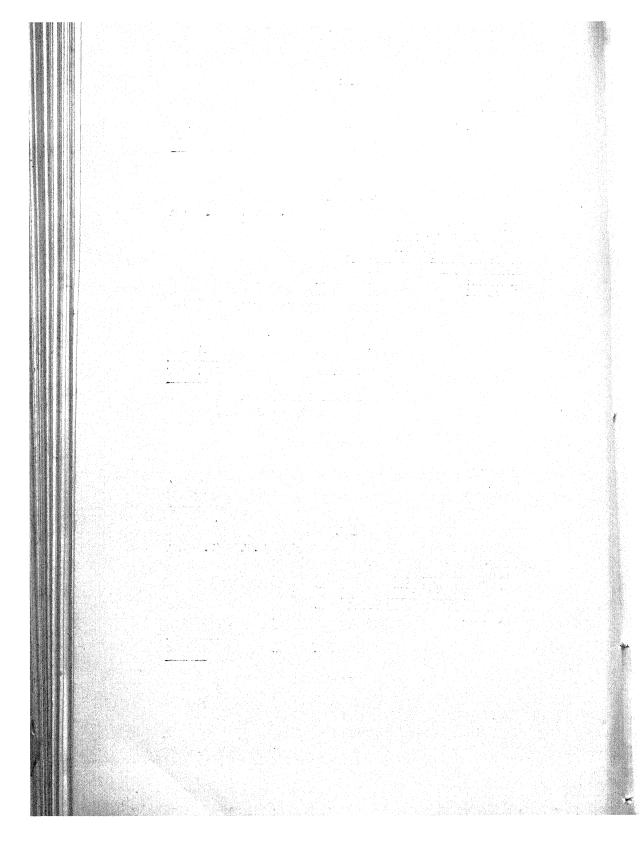
### Cr.

				Rs.	As.	P.	Re.	As.	P.
By	Asiatic Society			1,93,143	1.	9			
"	Oriental Publication Fund			3,174	9	9			
	Sanskrit Manuscript Fund		***	3,120	2	5			
,,	Arabic and Persian Manus	cript Fund		4,459	0	0			
	Bardic Chronicles Manuscr		4.0	2,400	0	0			
	Trust Fund	***		1,456	11	10			
•							2,07,753	9	9
		Total	L Rs.	446			2,07,753	9	9

ASUTOSH MUKHOPADHYAY,

Honorary Treasurer,

Asiatic Society of Bengal.



4. Supplementary Notes on the Bengal poet Dhoyika and on the Sena Kings.—By Monmohan Chakravarti, M.A., B.L., M.R.A.S.

#### I. DHOYĪKA.

Pavana-dūtam known to the anthologist Srīdharadāsa.

The Pavanadūtam was certainly known to Srīdhara-dāsa, as he quotes its verse 104 and the first half of its verse 101 in his anthology, the  $S\bar{u}kti$ karn-āmrta, under the name Dhoyika. The verse 104, as quoted in the MSS.,1 nearly agrees with the printed text

(J.A.S.B. 1905, p. 68), the only variants being चौचि for चौचि in line 1, ग्रेंबोप for ग्रेंबोप in line 3, and प्रवर्णननसा for प्रयत्सनसा in line 4. the verse 101, the second half differs, but why it is not clear. It runs in the anthology as follows:—

> दिन्तराष्ट्रं कनककालितं चामरं हैमदाछं यो गोडेन्द्रादलभत कविन्नाभ्रताञ्चकवर्ती। खातोयस श्रुतिधरतया विक्रमादित्य गोछी विद्याभर्तः खलु वरकचेराससाद प्रतीष्ठां॥ धोयीकस्य ॥ fol. 182b. उचावचप्रवाष्टः, कविदानवीचिः, दितीयस्त्रोकः, v. 29. 2.

The Pavanadūtam must, therefore, be earlier than Saka 1127 Phalguna, or 1206 A.D., in which year this anthology was completed.

Very little is known about the works of Dhoyika. So I give in the appendix 18 more verses quoted in Additional verthe Sūkti-karn-āmrta, one quoted in Jalses of the poet. hana's Subhāṣita-muktāvalī,1 and

quoted in the Sārngadhara-paddhati, in all 20 verses.

Jayadeva in his 4th verse calls Dhoyī kavi-kṣmā-patih as Srutidharah, or one having good memory. According to the commentators, this means that he was not original, probably alluding to his fondness for imitation as shown, e.g., in the Pavanadūtam. The epithet Srutidhara is, however, used in the verse of Dhoyika quoted above.

#### II. THE SENA KINGS.

Further materials for the ascertainment of the Laksmanasena Samvat are to be found in the "Notices of More dates in Sanskrit MSS." in the Durbar Library, La. Sa. era. Nepal, edited by our Philological Secretary, Mahamahopadhyāya Paudit Haraprasad S'āstri, which has just

l Uccāvaca-pravāhah, vrtārdha-sānta-vīcih, 5th verse (v. 61.5), fol.

<sup>2</sup> Dr. Bhandarkar's Report on the Search for Sanskrit MSS., 1897, p. xxvi.

come to my hands. Some 57 MSS. contain colophons dated in La. Sa. ranging from the year 91 (in the MS. No. 400, p. 15) to the year 558 (in No. 1076-73, p. 41). In most the dates are in figures, with the abbreviated symbols La. Sa. In only four MSS. words like the following have been used:— अव्हे अच्यावेनभूपात मते (MS. 787 अ. p. 22), अच्याव्हे (MS. 1577 इ. p. 33), गतस्चव्यवेनहेवीय (MS. 1113 इ. p. 35), and अच्यावेनवेष (MS. 13616, p. 51). The words मत 'expired,' and मते are significant.

Unfortunately, most of the dates given do not mention the tithis and the weekdays together, and are hence not verifiable. Of the few which do, in the following, the tithis come out correctly with the weekdays, if the La. Sa, be taken to have begun in

A.D. 1119-20 (Çaka 1041-2):—

(i) The Mahābhārata, śānti-parvva, Maithili characters (MS. No. 867, p. 25).

La. Sa. 412 Kārttika-sukla-saṣṭhyām gurau dine = Thursday, the 27th October, A.D. 1530 (the La. Sa. year being current).

(ii) The Bhāgavata-daśama-skundhu-ţīkā of Çrīdhara-svāmī (MS. No. 934, p. 28), Maithili character.

La. Sa. 472 Kārttika sudi 3 ravan dine=Sunday, the 15th of October, A.D. 1591.

(iii) The Tātparyya-pariśuddhih of Udayana, in Maithili character (MS. No. 1076 5, p. 31).

La. Sa. 339, Bhādra śudi saṣṭhyām kuje=Tuesday, the 15th of August, A.D. 1458.

(iv) The Kārttika-māhātmyam, in Bengali character (MS. No. 1077 ▼, p. 32).

La. Sa. 447, Śrāvaṇa vadi 5, candra-vāsare = Monday, the 5th of August, A.D. 1566 (the La. Sa. year being current).

(v) The Devi-māhātmya-tīkā, in Bengali character (MS.

No. 1361 ₹, p. 51).

Netr-ābdhi-rāma-yuta-Laksmanasena-varse Bhādre kuje
Haripure Hari-vāsare drāk or La. Sa. 372, Bhādra
su 12, kuje=Tuesday, the 15th of August, A.D. 1491

(the year being current).
(vi) The Devi-mühātmyam, in Maithili character (MS.

No. 1534 **4**, p. 613).

La. Su. 392, Pauşa vadi 3, budhe = Wednesday, the 18th of December, A.D. 1510 (the year current, already calculated by Professor Kielhorn, see note 4 to p. 19, Professor Bendall's Introduction).

(vii) The Sūryya-siddhānta-bhāṣyam of Candeśvara, in Maithili character (MS. No. 1165, p. 133).

La. Sa 392, Phūlyuna sudi 7, candre = Monday, the 23rd of February, A.D. 1511.

(viii) The Bhōgavatā, dasama-skandha, Maithili character (MS. No. 358, p. 13).
La. Sa. 397, Sakōbdāħ 1399.

The only colophon giving the La. Sa. with another era. They do not agree on the basis of Saka 1041-2. It is possible that the figures have been wrongly read or copied. Then Saka 1399 = La. Sa. 357, if the date fell in the months  $Caitra-\bar{A}\acute{s}vina$ .

These La. Sa. dates in the "Notices" thus support the conclusion that the Laksmanasena Samvat was an expired year (though the current was often used), beginning in Saka 1041-42, or A.D. 1119-20; and if there is any significance in the word

Mate, that it was adopted by the king Laksmanasena.

The genitive does necessarily signify regnal year. An old example.

The use of genitive in the king's name, though the year was of an era, I have traced to an old period. In the Taxila plate of Patika, the inscription begins:—

[Samvatsa] raye athasatatimae 20 20 20 10 4 4 Maharayasa Mahamtasa [Mo] gasa, (p. 75);

About which Bühler remarked:—"The year 78 is, of course, not that of the reign of Moga, but of the era which he used." (Ep. Ind. IV., p. 76).

From this analogy it does not seem improbable that the Laksmanasena Samvat may be the era of the founder of the Sena

dynasty, though passing in the name of Laksmanasena.

Was there a Sena prince named Kesavasena?

In the Sūkti-karn-āmṛta six verses are quoted under the name Srīmat-Keśavasenadeva, and one verse under Purusottama-pādānām, along with one verse under Srī-Ballālasenadeva-pādā $n\bar{a}\dot{m}$ , and eleven verses under the name  $Sr\bar{i}$ -

mal-Laksmanasenadeva (or simply Srī-L. or Srī-L.-sena without Deva). Were, therefore, a prince by name Keśavasenadeva in the Sena dynasty, and another prince named Purusottama? I'ādānāmi may mean a prince in the ancestral line, probably deceased. Prinsep read in the Bākarganj plate the name Keśavasena, as a son of Laksmanasena, though this is now said to be a misreading of Visvarupasena. In its traditionary list of Bengal kings, the Ain-i-Akbari mentions one Kesú Sen, the second remove from Lachman Sen (Translation, II. 146).

It is clear that from Vijaysena's time downwards, the tracts of Gauda, Vanga, Suhma, and probably The extent of the Rādha, came to be under the sway of the Sena Kingdom. Sena kings. An inscription of Vijayasena

1 In the Sarngadhara-Paddhati, one verse (No. 763) is quoted under Ballālasena and one verse (No. 923) under Laksmanasena. In Jibānanda Vidyāsagar's anthology, Kāvya-samgraha, under the heading Padya-samgrahah, four verses are cited, two being questions of Laksmanasena and the other two the reply of his father Ballalasena.

In the Adbhuta-sāgara under the heading Sapt-arṣīṇām-adbhutāni I find the following important passage: -Bhuja-vasu-daśa 1081 mita śake śrimad-Ballālasena-rājy-ādau-varş-eka-ṣṇṣṭhi-munir-vinihito = viśeṣāyām (India Govt MS., fol. 52a. Was then saka 1081 (A.D. 1159-60) the first year of Ballala-sena's reign? The same MS. (fol. 28b) also refers to "1090 saka" under the heading Brhaspater-adbhut-āvartah.—M.M.C. 12-3-1906.

was found at Deopara, which is in Godagiri Thana, District Rājsāhi. This is in the Vārendra tract, of which Gauda was the capital. In the Dāna-sāgara and the Adbhuta-sāgara, Ballālasena has been described as the king of Gauda. Similarly Laksmanasena has been described in the Pavanadūtam as the king of Gauda. In the same poem his capital Vijayapuri, identifiable with Nudiah, is located in Suhma. It was to Vanga Laksmanasena retired on the sack of Nudiah by Musalmans; and there his descendants were ruling in the time of Minhaj-as-Sirāj. It is not unlikely that the Rādha, which lay so close to Nudiah, would have fallen under the sway of the Sena kings. Consequently in the time of Ballalasena and Laksmanasena the greater part of modern Bengal had fallen under one overlordship; and from the wide prevalence of the Laksmanasena Samvat in Mithila, one may as well ask if Tirhut did not acknowledge his sovereignty.

Both Ballālasena and Laksmaņasena liberally encouraged Sanskrit literature flourished in the Sena rule.

Sanskrit poets and writers flourished during their reigns, one of whom, Jayadeva, attained an Indian reputation. The reign

of Laksmanasena may not inaptly be called the 'Augustan' period of Sanskrit learning in Bengal. This subject is interesting enough, to be reserved for another article.

#### APPENDIX.

Additional verses of Dhoyīka.

- (a) Sūkti-karn-āmṛta.
- (i) दरपरियात दूर्व्या दुर्व्यक्षामञ्जलेखां ग्लपयति न यदस्याः श्वासजन्मा द्वृताग्रः। स खलु सुभग मन्ये लोचनदन्दवारा मविरतपटुधारावाहिनीनां प्रभावः॥ fol. 57b.¹ प्रदूषारप्रवाहः, प्रियसम्बोधनवीचिः, पश्चमञ्चोकः or II. 30. 5.
- (ii) बारका मकरध्वनस्य धनुषे तस्यास्तनुर्वेधसा लिद्दिश्लेषिविश्रेषदुर्वेनतया जाता नितानद्वनुः। तस्येप्रविषि वे प्रसीद किमणि प्रेमास्टतस्यन्दिनी

<sup>1</sup> The reading is from a MS. of the Asiatic Society of Bengal (A) checked by a MS. of the Sanskrit College (S) and a MS. of the Serampore College (Sr.). The folio pagings are from the MS. A.

<sup>2</sup> MUNI.A.

दृष्टिं नाथ विधेहि सा रतिपतेः ग्रिञ्जापि सञ्जायतां ॥ fol. 59a. ग्रह्जारप्रवाहः, तनुताख्यानवीचः, दितीयस्रोकः, II. 34. 2.

- (iii) तस्यास्त्वदेकमनसः समस्वाग्यवर्षेः
  काग्रें वपुः ग्राट विभक्तिं यथा यथैव ।
  स्तोकायित श्रेयतयेव तथा तथैव
  कान्तिर्धनीभवति दीर्घ विलोचनायाः ॥ fol. 59a.
  ib., ib., æतीयस्रोकः, II. 34. 3.
  - (iv) न जीड़ा गिरिकान्दरीषु रमते नोपैति वातायनं दूरात्देखिगुरं निरस्यति जतागारे विचारस्पृद्धां। चात्ते सुन्दर सा सखी प्रियगिरामाश्वासनेः केवलं प्रत्याग्रां दधती तया च हृदयं तेनापि च त्वां प्रनः । fol. 59b. ib., उद्देगकथनवीचिः, चतुर्थश्लोकः, II. 35. 4.
  - (v) संख्दाः कथमणमङ्गलभयात् पद्मान्तरथापिनो प्यत्तालीकतलोचनं निष्ठग्रया वास्पान्मसां विन्दवः। न्यस्यन्याः सद्धकारपञ्जवमथ 'थालम्य पृष्युः पुरो धारावाद्धिभरेव लोचनजलैर्याचाघटः पूरितः। fol. 66b. ib., प्रवसङ्कतुकावीचिः, दितीयस्रोकः, II. 51. 2.
- (vi) खाजन्मश्रवसायिना अतुम्रतिराराध्य ग्रुष्यायुधं केनाकारिप्ररातनूदरितनुत्यागः प्रयागम्बमे । यस्यार्थे सिख लोलनेचनलिनी नालायमानस्बल- द्वास्पाम्भः मतनान्तरालवित्रगीवं प्रयः प्रस्रसि ॥ fol. 70%. ib., वक्षीवलोकनीवीचिः, चतुर्थस्थोकः, II. 58. 4.
- (vii) यत् पु(ष्णा\*)सि पिकान् करेण रिपृत्ध्वन्य वाम भुवां यच्छाच्छिय विलं विलुम्पसि करात् सन्नें सिष्टको तव। इंडो मादवनादितस्त्विय गते प्राखान्तरं वायस 'चोमेणाय समागमिन्यति स चेत् कान्तास्त्रिरं प्रोधितः #fol. 70b. 4b., काकवीचिः, चतुर्यस्त्रोकः, II. 59. 4.

<sup>ो</sup> बानस्य, S.

<sup>2</sup> दुने, Sr.

<sup>8</sup> WI, Sr. WI, S.

<sup>4</sup> चेथे, Sr.

(viii) प्रयासि यत् कुग्डलचक्रधारया विषाटयन्तीव घनं निग्रातमः। तदद्य कर्णायत¹कोचनोत्पत्ते फलेग्रह्यः कस्य मनोरथमुमः ॥ fol. 72b. ib., तिमिराभिसारिकावीचिः, चतुर्थस्लोकः, II. 64. 4.

(ix) रोमावली स चिवली (त\*)रङ्ग गाभी इृद्स्योपरिराजते ऽस्याः। सुखेनुभीतन्तनचन्नवाका वन्नचाता ग्रीवलमञ्जरीव॥ fol. 77a. ib., रोमावलीवीचिः, दितीयस्रोकः, II. 77. 2.

(x) खहन्तनीयानितकोमलस्य स्तनद्वयं वोष्ट्रमणं न तावत्। इतीव तत्सम्बद्धनार्थमस्याः विज्ञयं <sup>3</sup>पुष्पति मध्यभागः॥ fol. 77a. ib., मध्यवीचिः, दितीयस्रोकः, II. 78. 2.

(xi) तासाम् पीनन्तनकत्तसयोः स्यूलमुक्ताभिरामा विग्रीस्तास्त्रिवलीविषमे तीर्थग्रायामभाजः । विक्रे लोलालकविलुलिताः केतकच्चोदलच्चीं प्राप्तः कीडावनविच्चरणे विन्दवः स्वेदवारां ॥ fol. 89a. ib., वनविच्चारवीचिः, पश्चमञ्जोकः, II, 107. 5.

(xii) विश्वाणात्त्रोयलग्रन्यसनसनसनादामिन श्रोणिभारे
दूरादन्योन्यसाचि स्मितचतुरसखी कामिभिनींचामाणाः।
उत्तरस्तीरलेखां विग्रलकमिलनीपन्रमीषदिलचा [89b.
वचोनाग्रेषु क्रत्वा हरिणिग्रश्वदृष्यो वी(त\*)चिनांश्रकेषु॥ fol.
ib., जलकीडावीचिः चतुर्थश्लोकः, II. 108. 4.

(xiii) प्रियायाः प्रत्युषेगिलितकवरीवन्धनिवधा-वृदस्यहोर्व्यक्षीदरचिलित⁵लोलास्वल <sup>6</sup>म्बरः। धनादृते<sup>7</sup> प्रश्चत्वध मिय समन्दान्तस्तितं

<sup>&</sup>lt;sup>1</sup> चित, Sr. <sup>2</sup> त, S. त, Sr. <sup>8</sup> पुछ, S. पुच्छ, Sr. <sup>4</sup> खितकास्त्रिताः, A. <sup>5</sup> ची, Sr. <sup>6</sup> श्रद्धः, <sup>S</sup> चव, A. <sup>7</sup> छते, Sr

नमन्यास्तदुपं यदि जिखितुमीप्रो<sup>०</sup> सनसिजः । fol. 99b. ib., उषाप्रियदर्भगवीचिः, हतीयश्लोकः, II. 135. 3.

- (xiv) यत्र <sup>3</sup>तत्रवति सजुबन्धकी प्रीतये मदनप्रासनादिव । [103b. नौलकान्तपटतास्पाययो स्विमेद्य निविडं निम्नातमः । fol. ib., अस्थकारवीचिः, चतुर्थस्नोकः, II. 145. 4.
- (xv) चौगीन्त्र व्यनति चमा लिय रगो दोः भारितनोप्यचमाः प्रत्यिष्यं कस्पमानतनुषु त्वशानुकस्पानुतः। लं ग्रह्णासि सुवः करं सगदृशामेतेऽपि च खर्भवां तेभ्यक्तेभ्यधिक नु कि गुणिभिरप्यु दूरीयते यङ्गवान् । fol. 124a. चाटुपवाद्यः, चित्रोत्तिवीचिः, दितीयश्लोकः, III. 13. 2.
- निद्रा निद्धादृष्यः सखिखपि स वैलच्यानखाङ्कत्रग थादशं शुक्तेखया प्रतिपदं भ्रीत्कारिवक्रोन्दवः। लस्वाससुपागतिचातिसुनाद्वियानि नीनाग्रहा देताः प्रौटरतिश्रमप⁵णि्धिवैरङ्गैः कुरङ्गीदृणः fol. 132b. ib., भोगावलीवीचि:, हतीयस्नोकः, III. 33. 3.
- पश्चात्खुरद्वितयखिखितभूमिभाग (:\*) (xvii) मूद्गीं ज्ञताग्रचरण<sup>6</sup>द्वयसुग्रहेषं। सूर्द्धीवग्राह्दनविच्चस्तिना**श्व**राव<sup>7</sup> माराज्जनः परिजहार खलस्त्रङ्गं॥ fol. 171b. उचावच प्रवाहः, तुरगवीचिः, प्रधमक्षोतः, V. 2. 1.
- क्तभीकररिकेम् रैवसकत्स्कत्समवस्ववंधुरन्। (xviii) अपिवचर<sup>9</sup>गा।ग्रताड़ितं तुरगपङ्कालमापगा पयः॥ fol. 171b. V. 2. 2. ib., ib., दितीयश्लोकः,
  - (b) Jalhana's Subhāṣita-muktāvalī.
  - (xix) निजनयनप्रतिविम्बेरम्बनि वहुणः प्रतारिता कापि। नी लोत्पलेऽपि विम्द्रशति करमपेयितु कुसुमलावो ॥ गोईधोई कविराज। fol. 132b.

4 द्री. A. <sup>3</sup> थब, Sr 2 **सातु**, S. । नहि यदि, S. 7 W. A. <sup>6</sup> बहुब, A <sup>5</sup> 习, S. Sr. 9 WTT, A. 8 बारा, A.

Quoted in the Sāhitya-darpaṇa without the author's name (8th pariccheda, verse 15).

- (c) Sārngadhara-paddhati.
- (xx) किनतो निह्माधिरो यदि प्रथयित प्रेतेषु सख्यं यदि चीवः कीडिस माटिभियेदि रितं धत्ये प्रमधाने यदि । खट्टा संहरिस प्रजा यदि तथाप्याधाय भत्त्या मनः कंसेने करवाणि किं चिजगती सुन्या त्यमेनेश्वरः ॥ धोईकवेः॥

Peterson's Edition, No. 1161, p. 189. Ascribed to Umāpatidhara in the  $S\bar{u}kti$ -kar $\dot{n}$ -āmrta.

### March, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 7th March, 1906, at 9-15 P.M.

HIS HONOR SIR ANDREW FRASER, K.C.S.I., President, in the chair.

The following members were present:-

Lieut.-Col. A. Alcock, C.I.E., F.R.S., Dr. N. Annandale, Mr. I. H. Burkill, Babu Monmohan Chakravarti, Mr. B. L. Chaudhuri, Mr. L. L. Fermor, Rev. E. Francotte, S.J., Babu Amulyacharan Ghosh Vidyābhushana, Mr. H. G. Graves, Mr. D. Hooper, Hon. Mr. A. C. Logan, Dr. M. M. Masoom, Hon. Mr. Justice Asutosh Mukhopadhyaya, Lieut.-Col. D. C. Phillott, 23rd Cav. F.F., Mr. G. E. Pilgrim, Rai Ram Brahma Sanyal Bahadur, Pandit Yogesa Chandra Sastri-Sankhyaratna-Vedatirtha, Mahamahopadhyaya Satis Chandra Vidyabhusana, Mr. H. Nelson-Wright, Rev. A. W. Young.

Visitors:—Babu R. D. Banerji and Mr. A. H. Phillips.

The minutes of the last meeting were read and confirmed.

Twenty-five presentations were announced.

It was announced that the Hon. Sir A. Pedler, Kt., had expressed a wish to withdraw from the Society.

The President announced :-

1. That the Council had appointed Lieut.-Col. D. C. Phillott, General Secretary vice Mr. J. Macfarlane, resigned.

2. That Mr. Macfarlane and Mr. J. A. Chapman had been appointed Members of the Council.

The General Secretary read the names of the following gentlemen who had been appointed to serve on the various Committees for the present year.

### Finance and Visiting Committee.

Dr. N. Annandale.

Mr. I. H. Burkill.

Mr. J. A. Chapman. Mr. W. K. Dods.

Mr. A. Earle.

Mr. T. H. Holland.

The Hon. Mr. Justice Asutosh Mukhopadhyaya

Major L. Rogers, I.M.S.

Dr. E. D. Ross.

Mahamahopadhyaya Haraprasad Shastri.

#### Library Committee.

Dr. N. Annandale.

Mr. J. A. Cunningham.

Mr. Hari Nath De.

Mr. L. L. Fermor.

Mr. J. N. Das Gupta.

Mr. H. H. Hayden.

Mr. D. Hooper.

Mr. T. H. D. LaTouche.

Mr. J. Macfarlane.

Dr. H. H. Mann.

Mr. C. W. McMinn.

The Hon. Mr. Justice Asutosh Mukhopadhyaya.

Major L. Rogers, I.M.S.

Dr. E. D. Ross.

Mahamahopadhyaya Haraprasad Shastri.

Mr. E. Thornton.

#### Philological Committee.

Babu Muralidhar Banerji.

Babu Monmohan Chakravarti.

Mr. Hari Nath De.

Mr. E. A. Gait.

The Hon. Mr. Justice Asutosh Mukhopadhyaya.

Dr. E. D. Ross.

Pandit Satya Vrata Samasrami.

Pandit Yogesa Chandra Sastri-Sankhyaratna-Vedatirtha.

Mahamahopadhyaya Haraprasad Shastri.

Mahamahopadhyaya Chandra Kanta Tarkalankara.

Dr. C. Thibaut.

Babu Nagendra Nath Vasu.

Mr. A. Venis.

Mahamahopadhyaya Satis Chandra Vidyabhushana.

The Right Hon'ble Baron Curzon of Kedleston, M.A., D.C.L., F.R.S., was ballotted for and elected an Honorary Member.

Kumar Shyama Kumar Tagore, proposed by Mr. T. H. Holland, seconded by Mr. J. Macfarlane; Mr. W. P. S. Milsted, proposed by Major L. Rogers, seconded by Mr. T. H. Holland; Babu Puran Chand Nahar, proposed by Mr. Hari Nath De, seconded by Mr. J. Macfarlane; Babu Mohini Mohan Mitra, proposed by Mr. Hari Nath De, seconded by Mr. J. Macfarlane; Mr. Phra Maha Chandima, proposed by Mr. Hari Nath De, seconded by Mr. J. Macfarlane; and Mr. A. C. Woolner, proposed by Mr. J. Ph. Vogel, seconded by Dr. E. D. Ross; were ballotted for and elected Ordinary Members.

The following papers were read :-

1. An account of the Gurpa Hill in the District of Gya, the probable site of the Kukkutapadagiri-By RAKHAL DASS BANERJI. Communicated by Dr. T. BLOCH.

This paper will be published in a subsequent issue of the

Journal and Proceedings.

- 2. Notes on the Freshwater Fauna of India.—By Dr. N. Annan-DALE. No. I.—A variety of Spongilla lacustris from Brackish Water in Bengal. No. II.—The Polyzoon Histopia.
  - Some instances of Vegetable Pottery.—By DAVID HOOPER.
- 4. Sanskrit Literature in Bengal during the Sena rule.—By Monmohan Chakravarti.

This paper will be published in a subsequent issue of the

Journal and Proceedings.

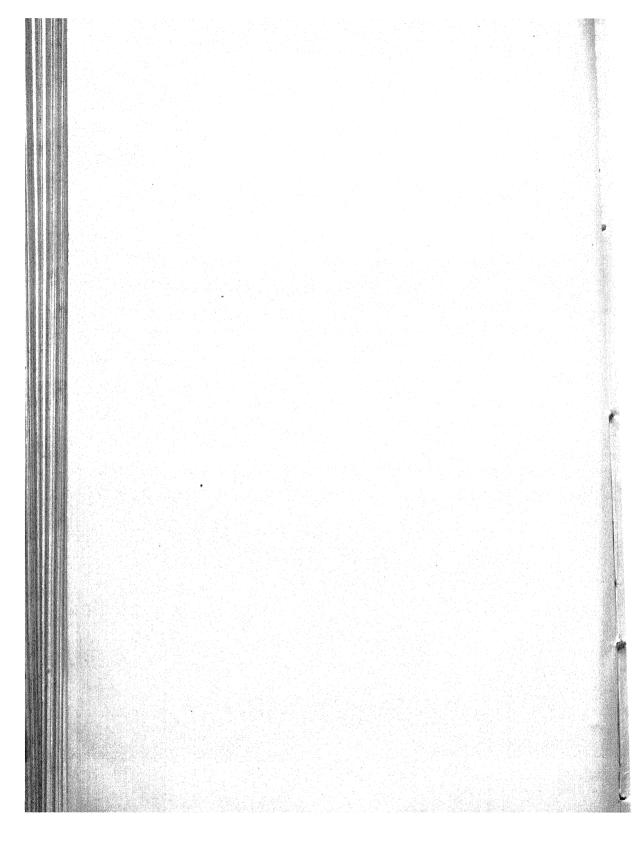
- Notes on some Sea-Snakes caught at Madras. By T. V. R Communicated by H. MAXWELL LEFROY.
- AIYAR. A descriptive list of the Sea-Snakes (Hydrophiidæ) in the Indian Museum, Calcutta. - By Captain F. Wall, I.M.S. Communicated by the Natural History Secretary.

This paper will be published in the Memoirs.

- 7. Wormia Mansoni, a hitherto undescribed species from Burma. - By CAPTAIN A. T. GAGE, I.M.S.
- On a cup-mark inscription in the Chumbi Valley.—By E. H. C. WALSH.

This paper will be published in the Memoirs.

9. Testudo baluchiorum, a new species.—By Dr. N. Annandale.



### LIBRARY.

The following new books have been added to the Library during February, 1906.

AGRICULTURE.—Imperial Department of Agriculture. Annual Report. 1904-05, etc. Calcutta, 1906, etc. 8°.

Presd. by the Inspector-General of Agriculture in India.

THE BABAR-NAMA. The Babar-Nama, being the autography of the Emperor Babar...written in Chaghatay Turkish; now reproduced in facsimile from a manuscript belonging to the late Sir Salar Jang of Hyderabad, and edited...by S. Beveridge. London, 1905. 8°.

E. J. W. Gibb Memorial, Vol. I.

Presd. by the Trustees.

Brockbank, Edward Mansfield. Sketches of the lives and work of the Honorary Medical Staff of the Manchester Infirmary. From its foundation in 1752 to 1830, when it became the Royal Infirmary. Manchester, 1904. 8°.

Publications of the University of Manchester. Medical Series, No. 1.

Presd. by the University.

CORNELL UNIVERSITY. Librarian's Report. 1904-1905, etc. [Ithaca, 1905, etc.] 8°.

Presd. by the University.

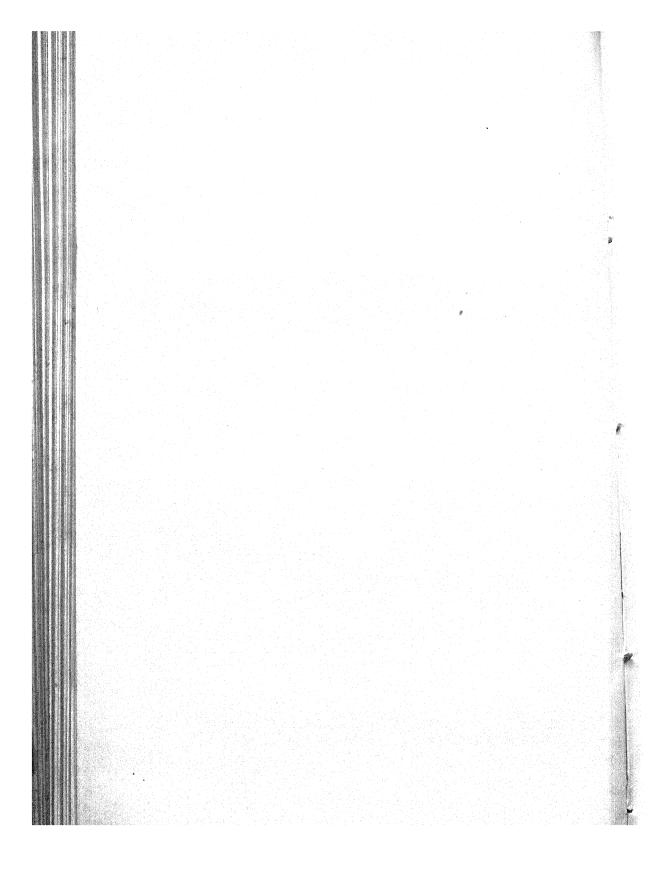
- Deussen, Paul. The Philosophy of the Upanishads...Authorised
  English translation by Rev. A. S. Geden.
  Edinburgh, 1906. 8°.
- Dos Santos, Joaquim José Judice. Collection Joaquim José Judice Dos Santos: Première partie: Monnaies et médailles de Portugal. Monnaies coloniales, du Brésil, des Indes Portugaises et de l'Afrique. Monnaies et Médailles de l'empire du Brésil. [Amsterdam, 1906.] 8°.

Presd. by Herr J. Schulman.

Lefroy, H. Maxwell. The Insect pests of Cotton in India. Calcutta, 1906. 8°.

From the Agricultural Journal of India, Vol. I., Part I.

Presd. by the Author.



Madras.—Adyar Library. Report. 1905, etc. [Madras, 1906, etc.] 8°.

Presd. by the Library.

Merrill, Elmer D. AND OTHERS. I. New or Noteworthy Philippine plants, IV. By E. D. Merrill; II. Notes on Cuming's Philippine plants in the Herbarium of the Bureau of Government Laboratories. By E. D. Merrill; III. Notes on Philippine Gramineæ. By E. Hackel; IV. Scitimineæ Philippinenses. By H. N. Ridley; V. Philippine Acanthaceæ. By C. B. Clarke. Manila, 1905. 8°.

Bureau of Govt. Laboratories, Manila, No. 35.

Presd. by the Bureau.

McGregor, Richard C. I. Birds from Mindoro and small adjacent Islands. II. Notes on three rare Luzon birds.

Manila, 1905. 8°.

Bureau of Govt. Laboratories, Manila, No. 34.

Presd. by the Bureau.

Peake, A. S. Inaugural Lectures delivered by Members of the Faculty of Theology during its first session, 1904-05. Edited by A. S. Peake. *Manchester*, 1905. 8°.

Publications of the University of Manchester. Theological Series, No. 1.

Presd. by the University.

Pope, T. A. The Reproduction of maps and drawings. A Handbook of instructions for the use of Government officials and others who prepare maps, plans and other subjects for reproduction in the Photographic and Lithographic Office of the Survey of India. [Calcutta, 1905.] 4°.

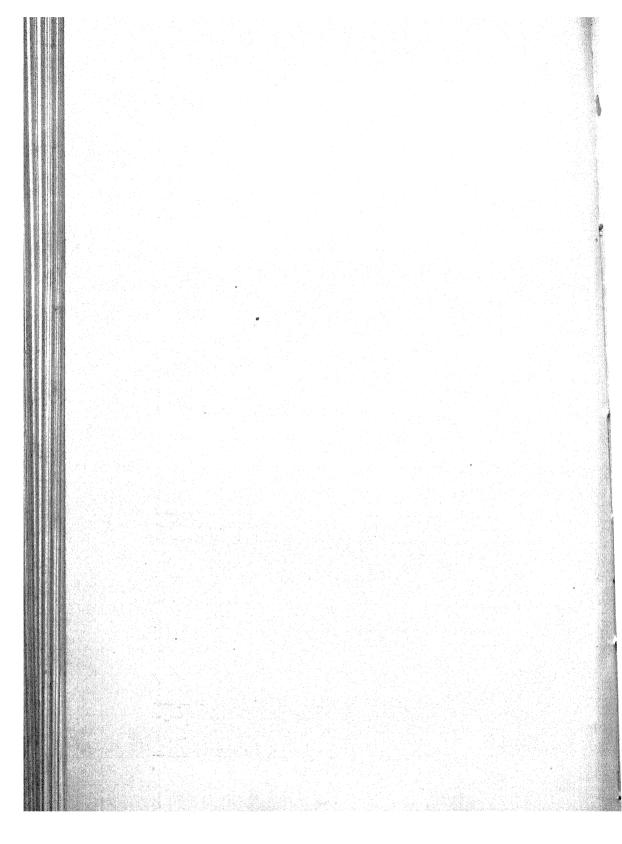
Presd. by the Surveyor-General of India.

Walsh, E. H. C. A Vocabulary of the Tromowa dialect of Tibetan spoken in the Chumbi Valley...Together with a corresponding vocabulary of Sikhimese and of Central (standard) Tibetan...Compiled by E. H. C. Walsh. Calcutta, 1905. 4°.

Presd. by the Author.

Williams, Rev. J. G. Joanis rebiaba Hamba Gyrau Zyma. The Gospel according to Saint John in the Cachari language. Translated by Rev. J. G. Williams. Shillong, 1905. 8°.

Presd. by the Govt. of Eastern Bengal and Assam.



5. The Umgá Hill Inscriptions in the District of Gayā.—By Parmeshwar Dayal. Communicated by the Philological Secretary.

The Grand Trunk Road which passes through the southern parts of the District of Gaya (in Bengal) has long been the most frequented highway in the district; and before the construction of the East Indian Railway, it was the chief route for traffic between Calcutta and Delhi. Travellers passing through this high road generally meet with beautiful sceneries of mountains covered with forest trees, and table-lands intersected by hill torrents rushing through overgrown jungle. About a mile and a half to the west of Madanpur (an important camping ground and Police outpost on this road) the scenery towards the south has always charmed the travellers and attracted their special attention. A group of hills is found covered with forest trees teeming with ruins of temples. One of these temples, standing on the western slope of a hill, is built entirely of stone and is still well preserved. It is very large and attractive, and commands a wide view to the west and north for several miles. Travellers have often been tempted to leave their road and to proceed southward to take a nearer view of the temple. This is the "Umgā Hill Temple," which has since long drawn the attention of archæologists and of the admirers of natural sceneries. In the front of this temple, which faces the east, lies a large slab of stone containing a long Sanskrit inscription of 28 slokas giving a short narrative of the founder of the temple, Raja Bhairavendra and of his royal ances-The inscription appears to have been noticed so far back as 1847 A.D., by one Captain Kittoe, 6th Regiment, N.I., whose notes with a translation of the inscription, in Hindi, were published in the August and December numbers of the Journal of the Asiatic Society for A.D. 1847, Vol. XXXI. In A.D. 1866, it was again noticed by one Mr. Peppe, whose notes, with a photo of the temple, were published in No. 1 of the Journal of the Asiatic Society for 1866 A.D. I had occasion to see these ruins in 1898 A.D., and on receiving information from one Pandit Devadatta Misra of Purnādih, a village situated in the vicinity of these hills, of the existence of another long inscription in one of the ruins on the top of the highest peak, I visited the spot twice. For a few years past (since the discovery of an image of Sri Gaurisankara in a cave on the top of it) this peak has been named "Gauri-Sankara Hill," The way leading to the top of the hill is very difficult and has become misleading by being intersected by numerous footpaths of the wood-cutters. After a long search for the second time, on 5th November, 1901, my labour was crowned with success, and the stone containing the inscription sought for, was found lying loose in the heaps of the ruins of a temple. Some facsimiles of it were taken by me at once, and with the help of the said Pandit Devadatta Misra, who had accompanied me on this occasion, it was deciphered immediately.

This inscription exists on a slab of stone about 22 inches long and 15 inches broad and is comprised of 15 lines containing 8

The inscription begins with salutations to Siva and Pārvatī, in prose. Then follow the šlokas. The first two šlokas give the names of the 12 ancestors of Rājā Bhairavendra. third sings, in high terms, the praise of Bhairavendra himself. The fourth sloka mentions the fact of the temples of Uma, Mahesa, and Ganesa, having been consecrated there by the Raja. The fifth contains the date of construction of the temples in astronomical symbols. After this is a small sentence, in prose, giving the year of construction of the temple in figures. Then follow three slokas quoted from some Puranas describing the merits of such pious deeds and the blessing secured by them. Then follows a small sentence invoking blessings to all. The inscription is dated Samvat 1500. The characters are modern Devanagari, with very slight difference in some of the compound letters. The figure 5 is of a curious shape, thus U+. There would have been perhaps some doubt when deciphering the date 1500 Samvat, were it not for the fact that a serial number exists at the end of every sloka, and the figure at the end of the fifth sloka is of this shape. The letters are generally  $\frac{9}{16}$ th of an inch long. There is a crack in the stone in the left-hand side of the lower corner, and the writing, with the exception of a few words in the end of the last four lines, and a letter or two in the 3rd, 5th, 6th, 7th, 9th, and 11th lines, is well preserved. The stone is perhaps even now lying loose near the heaps of the ruins, and on account of its compact oblong shape is liable to be removed by villagers for domestic use. It would be very well to fix it in a puckka platform to be built near these ruins for the purpose. It would be also much helping the cause of archeology if the village staff in charge of Umga Mahal be requested to see that plants, etc., growing on the ruined temples, are rooted out from time to time. The images of the gods, the consecration of whose temples is mentioned in this inscription, are still seen, some lying in or near the ruined temples, and others placed in a cavern on the top of the hill.

This inscription being composed in simpler style gives a clearer expression of the facts stated in figurative, and in consequence somewhat ambiguous language in the larger inscription noticed by Captain Kittoe, and therefore seems to throw addi-

tional light on the facts stated therein.

In the bigger inscription, the founder of the family of Bhairavendra is named Durdama, which means "invincible" and the epithet Bhūmipāla (King) is attached to this name. As the names of the various successors of the king and with the word "Pāla," such as Kumāra Pāla, Laksmaņa Pāla, etc., Captain Kittoe was led to consider Bhūmipāla as the chief name and Durdama as an epithet. This newly-discovered inscription fully clears the doubt now, as the name Durdama is mentioned in it with a new epithet. The names of the kings given in these two inscriptions are justaposited below for comparison:—

Serial No.	Names of kings given in the inscription noticed before by Captain Kittoe.		Names of kings given in the smaller inscription now discovered.	
1	Bhūmipāla			Durdama.
2	Kumārapāla			Kumāra.
3	Laksmanapāla	•••		Laksmanapāla.
4	Chandrapal	•••		Candra.
5	Navanapala			Nayapāla.
6	Sandhapāla			Sandheśa.
7	Abhaya Deva			Abhaya Deva.
8	Malla Deva			Malla.
9	Kesi Raja			Kesisvara.
10	Barasimha Deva*			Narasimha.
11	Bhánu Deva			Bhānu.
12	Somesvara			Soma.
13	Bhairavendra			Bhairava.

\* (Should be " Narsimhadeva.")

It will be seen that the termination " $p\bar{a}la$ " has not been given in the names noted in the 2nd inscription except in Laksmanapāla and Nayapāla. The name Nayanapāla of the 1st inscription is Nayapāl in the 2nd inscription. Sandhapāla of the 1st is Sandhapāla in the 2nd. Keshraj is Kesisvara. It also becomes clear that the name Barasimha read by Captain Kittoe is actually Narasimha.

In the last para of his note on the larger inscription, Captain Kittoe notices the fact of another inscription of the year 1297 A.D. having been found in the hills of Sirgujā by Colonel Ously, recording the fall in cattle of a Rājā named Lachhmandeva, son of Kumāra Rajā. Bhairavendra (whose last inscription, now under notice, is dated Samvat 1500, corresponding to A.D. 1443) is the 10th in descent from Laksmanpāla. This gives an approximate period of about 15 years to each king, and takes back King

Durdama to the earlier part of the 13th century A.D.

About three miles to the west of the village of Umgā, there is another small hill covered with ruins of temples, etc., called Sandhail Hill. In one of its caves, called "Sitā Thāpā," there are still located some old sculptures, with a few words of insignificant inscriptions here and there. The Chief "Lingam of Siva" is named Saṇḍheṣvara Nātha. Near the Police station of Fatehpur, about 45 miles east of Umgā, there is another shrine called Saṇḍheṣvara Mahādeva, which is surrounded by views and which is much frequented by pious Hindus. In honour of this shrine a fair is still held in the Šīva Rātri festival, in the month of Phālgun every year. These facts naturally suggest the idea that both these shrines were probably consecrated by the King Saṇḍheṣa, one of the ancestors of Bhairavendra of Umgā, and that the kingdom of Saṇḍheṣa extended over a considerable area in this district. About 25 miles north-east of Umgā is Konch which

is famous for a very large ancient temple built of bricks. It resembles in construction the ancient temple at Umgā, and by tradition its construction is ascribed to Bhairavendra of Umgā. This would prove that the kingdom of Bhairavendra was also extensive.

The importance of these two inscriptions lies specially in the

following points, viz :--

(1) That they contain a full description of the geneology of 13 kings of the lunar Dynasty, and may, on the discovery of some important inscription of any of the kings of this Dynasty, throw some light on the ancient history of the district of Gayā.

(2) That they contain clear dates in the widely-known era of Vikramāditya, and thus give a very clear idea of the period,

when the facts stated in them occurred.

(3) That one of them maintains the fact of consecration of a temple to Jagannātha, Balarāma and Subhadrá, and therefore serves as a conclusive evidence of the fact that the worship of these gods prevailed in Gayā, at least so far back as the 14th Century A.D.

(4) That the other inscription mentions the fact of construction of a temple to Uma, Mahesa and Ganesa. The images lying near the ruins of the temple are one of Ganesa and the other of Gauri-Sankar, viz., of Gauri, sitting on the left thigh of Sankara (Shiva). This image is of a comparatively modern form, though of a very ancient type. I mean its design is like that of the images of Gauri-sankara, made of black stone, lying mutilated here and there throughout the district (specially in the town of Gayā) in vast numbers, which by their appearance seem to be very ancient, and which in structure resemble the ancient Buddhist sculptures, which bear inscriptions in Kutila or other still more ancient characters; but the image of Gauri-sankara found near the ruins of the Umgā temple, on the top of the hill, is not of black stone, is much inferior in sculpture, and appears to be of a comparatively very recent period. A figure of Gauri-sankara, lying in the cave of Sita-Thapa in the Sandhail hill, however, much resembles this image. The images of Gauri-sankara are found in abundance in this district, specially in the town of old Gayá, as stated before. Some are fixed in the walls of modern temples or private buildings, while others are lying here and there under trees or in ruined temples like the Caityas, the relics of the Buddhist faith. The enshrinement of such a figure of Gaurišankara is entirely out of fashion in this period in India or at least in Behar. The facts that very old images of Gauri-sankara are found in great numbers everywhere, and that the enshrinement of the most modern of them yet discovered, has been clearly mentioned in an inscription, dated A.D. 1443, are likely to throw some light on the religious history of India. It would appear that the worship of the image of Gauri-sankara was much in vogue for several hundred years before the 15th century A.D.

(5) That these are perhaps the only inscriptions in the district, with the exception of the cave inscriptions of the Barāber

Hills, and the inscription of Külchānd, a governor of Gayā, under the Emperor Firoze Sháh, dated 1429 Samvat, in the temple of the Sun God in Gayā at Suraj Kund (published by Professor Keilhorn, C.I.E, in the Indian Antiquary, Vol. XX, for September 1891), that still remain attached to the ruins of the ancient temples, the

construction of which they commemorate.

(6) That they bear a decisive evidence of the fact that the modern Deva Nāgarī character continues almost unchanged from nearly 500 years; and that, therefore, the inscriptions found in Gayā, containing no date in any recognised era, and written in characters much different from modern Deva Nāgarī, must either be very ancient or written in imported characters then prevalent in other parts of India, by people who came to Gayā either as pilgrims or as conquerors. In this connection it may be said that the following inscriptions now available in the town of Gayā, which bear a clear date in the era of Vikramāditya, are written in modern Deva Nāgari character:—

(a) Inscription dated 1257 Samvat, 1200 A.D., on a slab of stone fixed on a wall on the northern side of the temple of Parpitā mahešvara in Gayā, and being No. 22 of the list of Gayā inscriptions given by General Cunningham, in Vol. III of his report on the Archæological Survey of India.

(b) Inscription of Sūryndāsa, dated 1516 Saṃvat, attached to the Gayesvarī temple in Gayā (being No. 28 of the list of General Cunningham), a translation of which was published by him in Vol. III of his aforsaid report.

(c) Inscription of Külachānd, dated 1429 Samvat, corresponding to 1373 A.D., attached to the Sürya Kunda temple in Gayā, published in the Indian Antiquary,

Vol. XX, pp. 312 to 315.

(d) Inscription dated 1519 Samvat, of seven long lines on a slab of stone, about 25 inches long and 7 inches broad, fixed on a wall in the temple of Koţeṣvara Mahādeva, south of the well-known temple of Sákṣī Mahádeva near Viṣṇupada in Gayá.

According to local tradition, the line of this family of the lunar kings ended with Bhairavendra, the last king named in these inscriptions. After his death, his widowed Queen is said to have succeeded him; but she is said to have been overpowered by one of the ministers of Bhairavendra, who was a Bháṭ (bard) by caste, but whose name is not known now. This Bháṭ minister was trying to seize the throne for himself when chance ordained it otherwise.

It is said that four brothers, warriors, belonging to the family of the Mahārāṇā of Udaipur were proceeding to the shrines at Gayá by the route, which later on seems to have been developed into the Grand Trunk Road by the Emperor Shēr Sháh. They happened to halt for the night under some trees near a well in front of the town of Umgā, the capital of

Bhairavendra. Some maidservants of the widowed Queen, who came to fetch water, asked them not to halt there as tigers used to come there at night. The brothers did not mind this warning, and stayed there, and actually killed some tigers. This spread the fame of their valour next morning so much so, that the Queen solicited their assistance in disentangling herself from the clutches of the Bhat minister. The brothers readily offered their services, and succeeded in killing the Bhát minister. The Queen, in recognition of this service, adopted one of them, named Rāo Bhānu Singh, as her successor. This man, who belonged to the Sisodhiā family of the Rájpoots of the Solar dynasty, stayed there and was the founder of a new generation of kings who ruled for a long time at Umgā. Of his three brothers, one is said to have proceeded to Nepal, where he is supposed to have become the founder of a new line of kings. Another of them is said to have proceeded to Puri, in Orissa, and to have been the founder of a new line kings of the Solar dynasty there. The fourth brother is said to have returned to Udaipur.

Rao Bhānu Singh, according to some papers, supposed to exist in the family of the present Rájá of Deo, is said to have been succeeded one after the other by 15 other Rājās i named below, the last of whom, Rajakumāra Jagannātha Prasāda Nārāyana Simh of Deo, is now a minor, aged about 9 years, whose property is under the management of the Court of Wards. His father Raja Bhickham Nárāyana Simh Bahādûr died in 1898 A.D. Assuming that the accession of Rao Bhanû Singh happened in 1448, viz., after five years of the date of the last inscription of Bhairavendra, the 15 Rājās appear to have reigned throughout a period of 450 years, giving an average of thirty years to each reign. It is said that Atibala Singh, the sixth in descent from Rao Bhanu Singh, killed the then Muhammadan rulers of Deo, and removed his capital from Umgā to Deo. The fort at Umgā is now a heap of ruins covering a large area and overgrown with jungle. Some traces of gateways, walls and wells can still be found, and in one of the rooms are still enshrined some family gods, to worship which the Rajas and Ranis of Deo even now use to go to the ruined fort once a year or at least on the occasion of marriages.

A tomb of Bijûli Shahid at Deo, and one of Dáná Shahid at Ketaki, a neighbouring village, are still associated by tradition with the conquest of Deo by Atibal Singh.

In this connexion it may be said that almost all the peaks and ranges of hills in the southern part of the district of Gayá have marks of ruins on them. Some of them were apparently the strongholds of kings, while others were the sites of sacred shrines.

<sup>1 (1)</sup> Rao Bhānu Simha. (2) Sāhasa Malla Simha. (3) Táráchand. (4) Biśvambhara Simha. (5) Kalyána Simha. (6) Atibala Simha. (7) Nayapāla Simha. (8) Pratāpa Simha. (9) Prabil Siwha. (10) Chatrapati Simha. (11) Fateh Nārāyaṇa Simha. (12) Ghanasyāma Simha. (13) Mitrabhānu Simha. (14 Mahārājā Sir Jayaprakāša Simha, Bahadur, K.C.S.I. (15) Rājā Bhikham Nārāyaṇa Simha Bahadur. (16) Rājkumāra Jagannātha Prasāda Nāyaṇa Singh (the present proprietor of the Deo Raj).

The ruins on the hills of Mandā, Pāchār, Dongrā, Cheon, Bakan, Sandhail, Umgā, Krānagar (about six miles south of Deo), Pawai, Koluha, Singar, Maher, etc., may be quoted as instances. In the days of yore when the use of artillery was in its infancy or totally unknown, or out of practice on account of being inhumane, kings and noblemen probably selected their capitals in hills and other inaccessible places where fortification was rendered easy by nature. To build a castle in the plains was perhaps considered unsafe. The seats of Government were therefore in the southern hills and in the inaccessible jungles, which still abound in ruins of towns and palaces. The northern fertile plains of the Gayá district were therefore perhaps less densely populated in those days, being more open to foreign attacks.

Text of the inscription on the top of Gouri Shankar Hill near Umgā, j District Gayú.

🕉 नमः भ्रिवाये च नमः भ्रिवाय ॥ चासी द्र्मदुःखदावदहनः सोमान्वये दुर्दम कुलपालको गुगानिधिज्ञासा कुमारोऽभवत्। तसाह्नद्यागपाल सक्ती चन्द्रस्ततञ्चन्द्रविद्याची नयपाल एकप्रस्याः सग्रदेश इत्यात्मकः ॥१॥ ज-चे यो (भयदेव एक पुरुषो मल्लः प्रसृत[क्त] तक्तस्मात् के प्रवभिक्त यिक्त निपुर्याः के-शीश्वरो धार्मिकः। तत्त्वुद्गरसिंच एव रिएजिद्वानुर्मचौयांस्ततः सोमः सोम-कुलावतं न्सपरमो ब्रह्मारहदः कोटिदः॥२॥ तस्माह्मोकविवर्द्धनो न्द्रपगुरुवंश्र-स्य कत्ती प्रभुः श्रेष्ठः सर्द्वा सूलो कियो वसुमती येगास्ति राजन्वती । दीनत्राणतला गयागदिविषयासादद्वद्धम्मविच्ही अमद्भेरवभूपतिर्गाजपतिः की चि रामीप-मः॥ ३ ॥ उमां महेशां सगरां गराेशां संस्थाप्य वेधा विदधे विधिन्नः। नदादिवर्धे क्सगं गुणाकां सोमान्वयानामिष्ट पत्तनं च ॥ ४ ॥ गिरी गिरी ग्रं गिरिनां गणेशं खखेषचन्द्रे खलु विकामाब्दे॥ चैष्ठे ऽसिते मासतियौ च चन्द्रे प्रवर्षिपद्भरव एक भूषः ॥ ५ ॥ व्यवाङ्केनापि सम्वत १५०० ॥ क्रातापि पातकं घोरं ब्रह्महत्यादिकं न-रः। कारियत्वा इरेर्डाम ध्रमपापो दिवं त्रजेत्॥ ६॥ तीर्थे चायतने पुरहे सि द्वित्ते चे तथाश्रमे। कर्त्तरायतनं विष्णोर्यथोक्षात्त्रगुणं फलं॥ ७॥ फलग्रतगुणं ग्रेलि यथो क्वात्परिकी तितम्। सहस्वगृश्यितं प्रदंगे कर्त्तदेवालयस्य च ॥ ८ ॥ शुभमस्त सर्वम् ॥

<sup>1</sup> Should be गणनिधिक्रीका।

<sup>2</sup> Should be कुलावतंस।

<sup>3</sup> In the original it is विच्छी, that is, the च् is wanting.

<sup>4</sup> It can be also read नदादि दुग्धैर्॥

ь चैंडे is probably a mistake चेंडे॥

<sup>6</sup> प्रत्यष्टिपत् does not seem to be correct Sanskrit : may be प्रातिष्ठिपत्

Translation of the second inscription discovered recently on the top of Umgā Hill in Gayá.

Om! Salutation to Sivā (Gaurī) and to Siva.

There was in the lunar race one (King) Durddama the invincible, a fire for the forest of miseries. His son was Kumára, the supporter of his race, and the ocean of virtues. (was born) Laksmana Pala, the virtuous; and of him Candra, who was like the moon; the lotus-eyed Nayapala the refuge (of all); his son was Sandhesh.-1.

Of him was born Abhayadeva the Great; of him Malla, and of him the virtuous Kesisvara well up in the devotion of Kesavá. His son (was) Narasimha, the defeater of enemies. Of him (was born) Bhanu the Great, and of him, Soma, the jewel of the ear of the lunar race, the great bestower of worlds and giver

by ten millions.—2.

Of him was born King Sri Bhairavendra, the extender of dominions, the leader of kings, promoter of his race, the lord, the great, the accumulator of treasures, the supporter of worlds, the king by having whom the earth has the honour of being named a kingdom, (who is) the defender of the poor, the excavator of tanks, the performer of sacrifices, the consecrator of temples to gods, the knower of Dharmas, the lord of elephants, (who is) like Rāma in fame.—3.

Having enshrined (in temples) Umá, Maheša and Ganeša with his Ganas, (the king who is) well acquainted with rites and (having strengthened) with fortifications of rivers, etc., (he) made Umgá the residence of the clans of the lunar dynasty, an abode

of (all) good things.-4.

On (this) hill, the King Bhairava, who has no equal, (Lit. who is one) enshrined Girisa (Siva), Girijā (Gaurī), and Ganesa, on Monday the 12th date of the dark half of the month of Jyaistha in the year 1500 of the era of Vikramāditya.—5.

Also here in figures 1500.

Even he, who commits the most horrible sins, such as the killing of the Brahmanas, etc., by building a temple to Hari, is

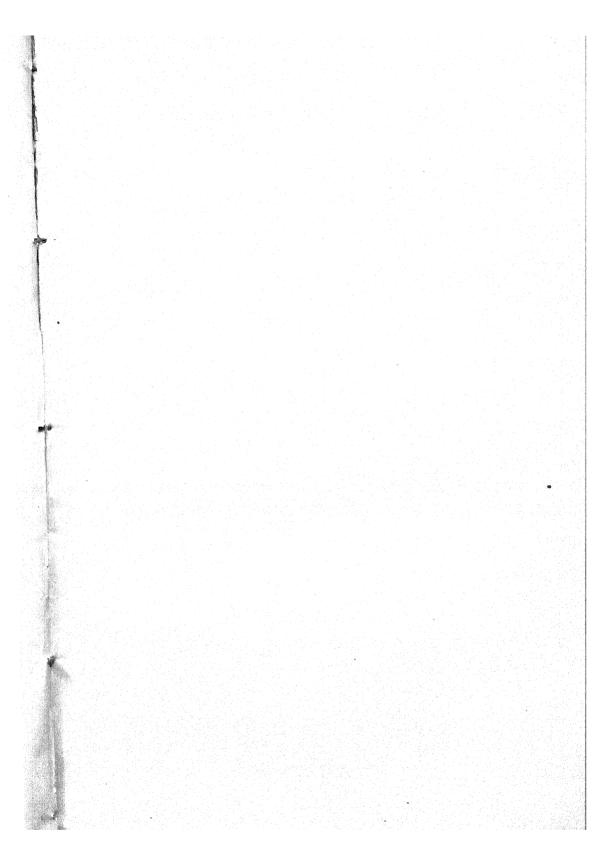
washed of his sins and goes to heaven.-6.

Three times greater merit than that stated above, (is secured by him) who builds a temple to Visnu in a place of pilgrimage, in a sacred place, in a place of devotion, and in an hermitage.—7.

It is said the merit is 100 times greater than that stated above (to him who builds a temple) on a hill, and thousand times

(to him) who builds a temple on the top of a hill.—8.

Peace be to all.



6. Some Lullabies and Topical Songs collected in Persia by Lieut. Colonel D. C. Phillott.

The following lullables (with the exception of No. VI) are common in the districts of Shiraz or Kirman, and probably in other parts of Persia:—

T.

LULLABY.

Lā-lā lā-lā be my Rose;

Be my darling; be my Bul-bul.

Never die nor leave me.

Lā-lā lā-la lā-lāy.

Lā-lā lā-lā lā-lā saleep.

The sound of his dada's shoe I hear.

Lā-lā lā-lā, my own wall-flower,

Why wilt thou ne'er rest still?

Lā-lā lā-lā lā-lā lā-lā<sup>5</sup>ī.

II.

Lā-lā-sī lāy-lā-sī lāy-lā-sī lāy-lā-sī Sleep dear life lāy-ā-sī lāy-lā-sī.

Alā lā-sī Bā-bā-s Manṣūr
Go tell my mother.

<sup>1</sup>  $Al\bar{a}$  is here part of the lullaby sound: it is not an interjection.

2  $B\bar{a}b\bar{a}$  a slave-boy, a kind of 'buttons.' Mansūr "Victorious" is a name often given to negro slaves.

T.

# 1 V V

II.

<sup>1</sup> Lā-lā, lullaby: lā-lā kardan (m.c.) "to lull an infant to sleep."

Mī-ād, vulgar for mī-āyad.
 Ārām, i.e., ārām.

<sup>4</sup> The Persian bulbul (Daulias Hafizi) is very like the English nightingale.

They gave me a pitcher and I went to draw water; Close by the spring I fell asleep.

Alā lā Bābā Mansūr
Go tell my mother.

Two Turkish men from Turkistan Carried me off to Hindustan. *Alā lā sī* Bābā Manṣūr Go tell my mother.

They married me to the son of a king, Ruler of men and of women.

Alā lā a Bābā Mansūr

Go tell my mother.

Now four sons I've got,
One's with the flocks, one's with herds,
One's at school 1 and one's in the cot.2

Alā lā i Bābā Manṣūr
Go tell my mother.

#### III.

Lā-lā lā-lā my dear son

Sleep my sweet life;

Suhel 3 has risen o'er the hills, the moon behind him.

Oh leader of the caravan, when wilt thou load and start?

<sup>1</sup> Kut $\vec{v}$ -khāna for maktab-khāna.
2 Gahvāra is a low cradle of canvas, etc., suspended from four low posts like an English cradle. Nannī or nanū $\vec{v}$ , vulgarly gāchā, is of leather or of canvas and is suspended and rocked like a hammock. The Shah styles the hammock in a circus underneath the trapeze  $n\bar{a}n\bar{u}^{\bar{v}}$ .
3 Suhel Canopus.

سبو دادند بآب رفتم سر چشمه بخواب رفتم الا لائی بابا منصور خبو بو مادرم رسون

دو قا تركي ز تركسترون موا بودند بهندوسترون الأثى بابا منصور خبرون خبر بو مادرم رسون

عروسیسم کوده شهزاده رئیسس هو نو و ماده الای بابا منصور خیسو به مادرم رسون

حالا دارم چار تا پسسو یکی رفقه سو رصه یکی رفقه سو گله ن یکی رفقه سو که یکی رفقه سو رصه یکی دیگو بگهواری الا لائی بابا منصور حبسو بو مادرم رسون

III.

لالا لالائی نفنه 3 رودم 4 بخواب ای جان شیوریدم مهید از کولا در آمد مه بدنبال بزرگ قافله کی میکذی بار؟

<sup>Na.na "mummy," a child's word for mother, and hence a mother's address for a child, vide note 2 to Lullaby No. IV.
Rūd P.= tifl, a child, son or daughter.</sup> 

Oh leader of the caravan, pray travel slow For my little child has lagged behind.  $L\bar{a}$ - $l\bar{a}$   $l\bar{a}$ - $l\bar{a}$  be my sweet marjoram, Thy dada's come; bright be thine e'en.

Come, oh moon of my sky!

Art up-rooting violets:

Art planting roses?

Lā-lā lā-lā be my sweet marjoram,

Thy dada's come; bright be thine e'en.

A white bird was I in the almond tree!;

Fate cast a stone and broke my wing.

Oh Fate withhold thy hand, for I am young;

The World's to me as yet unknown;

The joy of life's unwon.

Lā-lā lā-lā be my sweet marjoram;

Thy dada's come; bright be thine e'en.

 $\lceil N.S. \rceil$ 

بزرگ قافله ارام ا راسی كه طفـل كوچكم مانده بدنبال ولا لا گل آلشن بابات آمد چشت و روش

سيا مالا بلنده السياني بنفشے میکدیے گل می نشانی ענ עע לע די היי بنات آمد چشت روشن

سفید صرعی بدم در شاخ پسته فلک سنگے زدلا بالم شکستے فلک سنگم مزن که من جوانم نهٔ دندسا دیدهام نه شاه کامم لا لا لا لا گل آےشےں با بات آمد چشت روشی

<sup>1</sup> Abshān pronounced ābshan, in Arabic sa'tar, is also called pūdīna-yi kūhī or hill-mint: here = "my sweet child." 2 Chash-at, vulg. for chashm-at.

## IV.

# V.

Lā-lā lā-lā lā-lā lā-lā lā-lā';
Friends, my sweet son is sleeping;
Were I to die for him, t'would be but just;
Lā-lā lā-lā lā-lā lā-lā lā-lā lā-lā'ā.

Art thou lion, art thou leopard, I know not;
This I know thou'rt struggling with me;
Lā-lā lā-ā ī my Sweet Life, lā-lā'ā.
Friends my son is sweet of speech;
He will have a pen and be writer to the Court His clerks will all be safe from harm,
Lā-lā lā-lā lā-lā lā-lā lā-lā'ā.

IV.

# YX

لالا لائ جان شيريد م لالائ عزيزو روح نوشيد م لالائ لالئ برات أ مادر في بعيرم من لا لائ ولا لا لا لا لا لا لا لا لائ المت عزيزان لذت دنيا بعال است هرانكس طفل دارد با كمال است هرانكس درجهان طفلى ندارد الرجهان طفلى ندارد لالا لالا لالا لالئ للا

V.

# XX

1 Barāt for barāy-at.

<sup>&</sup>lt;sup>2</sup> Mādar: relations call children by the same appelation that children call them; thus a mother will call her son or daughter mādar or mādar-jān and so on.

3 Ast, Future Tense.

## VI.

# Tehran Lullaby.

لا لا لالای میخوانم باز دوستی بسرهنگ مینداز سرهنگ می آمد به چاهک خان باز ا رفته شهر بازک لا لا لالای میخوادم باز

اسب سيالا جسو دادي دور اردو طسو دادي لا لا لا لاي ميخوانم باز تقادسگ نسر خسريدي ايد اوسل دويدي جسون 4 خسودت لا دادي 5 لولا لالای ميخوانم باز

<sup>1</sup> Mir Khān Bāz is the name of the father of the infant.

<sup>2</sup> Tau = tavāf.

<sup>3</sup> Itul utul = dar in tal va dar an tal.

<sup>4</sup> i.e., jān.

<sup>5</sup> Lā dādan = nuqsān dādan.

The following topical songs  $(tasn\bar{i}f)$  collected in Persia are fair samples of those composed and sung by the  $l\bar{u}t\bar{i}s$ .

I Lūti a strolling player, a buffoon, tc., etc.

I.

## THE KING OF CHINA'S DAUGHTER.

- "The King's daughter is just like this and just like that. Come, show me thine eyes, That I may describe them."
- "Mine eyes—what dost thou want with them?" Hast never seen the eyes of the gazelle? Mine, too, are like them."
- "My love's brows are just like this and just like that: Oh show me thy brows, That I may describe them."
- "My brows-what dost want with them? Hast never seen a bow in the bazaar? They, too, are like that."
- "My love's lips are like this and like that: Oh show me thine lips, That I may describe them."
- "My lips-what dost want with them? Hast never seen a pista? in the bazaar They, too, are like that."
- "My love's cheeks are like this and like that: Come, show me thy cheeks, That I may describe them."
- "My cheeks-what dost thou want with them? Hast never seen peaches in the bazaar? They, too, are like that."

<sup>1 &#</sup>x27;What dost thou want with them,' i.e., 'why do you ask about them?'
2 Poets compare a mistress's mouth to a pista nut. The nut is boiled in its shell, which parts slightly like two lips and exhibits the pink skin of the kernel inside.

I.

# دختر شاه چین

"دختر شاه همچين وچين ا چشمت را بمن بنما تا من بگويم چه چي " " \* "چشمم راميخواهي چکني؟ چشمان آهو 3 نديدي ؟ اينهم بهمچيده 4 "

" ابروى بارم چين وچين ا ابروت را بمن بنما قا من بگويم چه چي " \*
" ابروم ميخواهي چكني ؟ كمان به بازار نديدي ؟ اينهم بهمچيده " \*

" لبان يارم چين وچين لبت را بمن بنما قامن بكويم چه چي " \*
" لبم را ميخواهي چكني؟ پسته ببازار نديدي ؟ اينهم بهمچيسه " ،

د لُپان 5 يارم چين وچين لپت را بهدن بنما تا من بگويم چه چي " \* د لُپان 5 يارم چين وچين لپت را بهدي ؟ اينهم بهمچيد " \* د لپمرا ميخواهي چه کني؟ هلو به بازارا نديدي ؟ اينهم بهمچيد " \*

Hamchin u chin or chin u chin: colloquial for hamchunin u hamchunin.
 Chi is the vulgar form of chiz and chi chiz or chi chi is vulgar of "what?"
 For na-dida-i.

<sup>4</sup> Hamchī is in speaking pronounced hamchī. Ast is sometimes shortened into a final a: this is now considered vulgar.

5 Lup, "cheek."

- "My love's teeth are like this and like that: Come, show me thy teeth, That I may describe them."
- "My teeth—what dost thou want with them?
  Hast never seen fresh pearls?
  They, too, are like them."
- "My love's breasts are like this and like that: Come, show me thy breasts," That I may describe them.
- "My breasts—what dost want with them?
  Hast never seen Shiraz limes?
  They, too, are like them."
- "My love's bosom is like this and like that: Come, show me thy bosom, That I may describe it."
- "My bosom—what dost want with it?"
  Hast never seen white marble?
  It too is like it."
- "My love's navel is just like this and just like that: Come, show me thy navel, That I may describe it."
- "My navel—what dost want with it?

  Hast never seen a crystal bowl<sup>1</sup>?

  It too is like one."
- "My love's 'chastity' is like this and like that Come, show me thine honour, That I may describe it."
- "My c \* \* t—what dost wish with it?

  Has never seen the foot of a gazelle?

  It, too, is like one."

<sup>1</sup> Nāf-i finjānī dārad; a point of beauty much insisted on by Persian story-tellers. Finjān is the small deep glass for drinking coffee or tea, and nāf-i finjānī is a navel deep shaped like a finjān.

- د دندان بارم چین و چین دندان را بمن بنما تامن بگویم چه چی ، .
- « دندانمراميخواهي چكني؟ مرواريد تر 1 نديدي؟ اينهــم بهمچيـــــ " \* " \*
- " پستان يارم چين و چين پستانت را بهن بنها قامن بگويم چه چي " \*
- وو پستانمواميخواهي چکني؟ ليموي شيواز نديدي ؟ اينهم بهمچيده " \*
- "سينةً يارم چين و چين سينه اك را بمن بنما تامن بگويم چه چي " \*
- والمستقام راميخواهي چکاي؟ مومو سفيد نديدي ؟ اينههم ابهمچيه ٠٠٠

- ود ناف يارم چين و چين نافت را بهن باهسا قامن بگويم چه چي " \*
- " نافه را ميخواهي چکني؟ کاسگه بلور نديدي ؟ اينهـم بهمچيــه " \*
- عصمت أيارم چين وچين ناموست أو رابهن بنما قامن بگويم چه چي " \* و کُسم ارا ميخواهي چکني سم آهو الا نديدي ! اينه بمه بهمچيد " \*

<sup>1</sup> Tar, "fresh, i.e., with lustre." 2 Ismat and nāmūs, yu'nī farj.
3 Kus [Ar. pl. akwās], is the crudest word for the article either in Persian or in Arabic.

<sup>4</sup> Z' Sirr-i nihān-ash yak-ī ḥarf būd Sum-i āhū-ī rafta dar barf būd.

<sup>&</sup>quot;——to one thing only can it be compared i.e., to the print of a gazelle's foot in pure snow."

## II.

# Taṣnīf-i Du<u>kh</u>tar-i Ṣafūrā.¹

لنگر کشتی روی دریا زده .. خربزه بر تخم آخوندها زده شانه بزلفهای عروسها زده .. دانه بقاجان خروسها زده سنگ بدندان صفرا زده

جونم که زده ؟ جونم من زدم - والله من زدم - پی وپی زدم - برو ای عزیز پرای مغبو سُرید ند اورا شفید بر سوی میدان دوید ند یخهٔ خود را درید ند یک خرمصری خرید سفی میدان درید ندان صفورا زده

جونم که زده ؟ جونم من زدم - والله من زدم - پي وپي زدم - برو اي عزيز

## III.

# Tasnif.

روزگار	اب دریا بشم, آبي بنوشم
روزگار	صدای کشقی ۔ بان آید بگوشم
روزگار	الهي أَم ناهُدا! توخوش خبر بو <sup>8</sup>
روزگار	که یارم جاهل و تازه سفر بو
روزگار	جفای بیوفایان کرده پیرم
روزگار	برم اله ; يار وفاداري بگيرم
روزگار	اگو يار وفاداري نبساشد

<sup>&</sup>lt;sup>1</sup> Safūrā was the daughter of a mulla in Shiraz. She had a reputation for learning and piety and used to preach to women from the pulpit. She, however, strayed from the path and this tasnīf was composed by the wags of Shiraz.

<sup>&</sup>lt;sup>2</sup> Illāhī = "I hope." 3 Bū, i.e., bāsh. 4 Biram = bi-ravam.

IV.

Taṣnīf-i Ṣādiq-i Mullā Rajab.1

[Every second line is from Hafiz.]

تصنیف صادق ملا رجب ا

همده شب طفال نكو گايم وگاهي زن زشت ألا مذاح رندان مكن اي زاهد پاكيدو سرشت كيدرم از كس چو برون رفت ره كون بگروت همه جا خانه عشق است چه مسجد چه كنشت كر شب تار بهرو كس كه رسي سيدر بگا كس چه داند كه پس پرده كه خوب است وكه زشت ؟ دهتر قحبه اگر كس بدهد عدم مكرن دهتر معدم مكرن الله كري بر تو نخواهند نوشت شب جمعه و تو اگر بچه شدد به گائي

V.

Taṣnɨf-i Sādiq-i Mullā Rajab.

تصنیف صافق ملا رجب لُپچهای و یارم ماچ قشنگسش می آد بعد ازان ماچ قشنگ آله - کلنگش و می آد مادر کهنسه لوندی کی یارم را زائیسد و بحقیقت نگری تف بتوی لنگش می آد

<sup>1</sup> Sādiq son of Mullā Rajab of Kirmān. He adopted the profession of a lūtī from choice, and his tasnīfs, amongst certain classes, have a notoriety.

<sup>2</sup> Gāyam understood after zan-i yisht.
4 Shab-i Jum'ah is m.c. for Panj-shamba. Any good work done on the Muslim Friday night (i.e., the English Thursday night) has a special value.
5 Lupcha, dimin. of lup, "cheek."

<sup>6</sup> Ala-kulang, meaning doubtful: probably garm shadan-i hairānāt dar vaqt-i juft giriftan.

شکال اهلیل ایارم گو که بدریا افتد شور وغوغا بسر ماهی ونهنگش می که آن مقانی 2 بسوی چاه زنخددان تو کند آفرین بر تبر و بیا و کلنگسش می آد سعدى و حافظ شيراز دگر شعر نگو صادق ملا رجب شعب جفنگ شي مي آن

#### VI.

# Tasnit.

من ازان زمانی که دل با تو بستهم .. تو پروردگاری و من حق پرستهم ای حبیبم ای طبیبم عشق رویت شد نصیبم من از آن زمان قسمتهم شد جدائی .. مرا می کشد این ستمگر 3 الهی ای حبیبم ای طبیبم عشق رویت شد نصیبم به يعقسوب بو \* گو كه در مصسو ديدم . . همان يوسفي را كه گم كودة بودي ای حبیبم ای طبیبم عشق رویت شد نصیبم الهسم عزين بعيدود زليدا .. دكر يوسفهم تاب ازندان نداره ق ای حبیدم ای طبیدم عشق رویت شد نصیدم

# VII.

# Tasnīf.

'My heart it loves a gypsy, Oh!'

مسلمانان دلم لولی پسند است . . لب و دندان لولی مثلل قند است وفا و غیروس از لولی مجوئید .. پدر سگ دوی 6 تراش غلیته 7 بده است

<sup>1</sup> Ihlil for hilal.

<sup>&</sup>lt;sup>2</sup> Digger of qanāts.

<sup>3</sup> Sitam-gar, i.e., ma'shūqa.

<sup>4</sup> Bar-gū, poetical.

<sup>5</sup> There seems to be no clear meaning in these two lines. " dear" is also a title for the Ruler of Egypt.

Dūk. The Lulis spin thread.

<sup>7</sup> Ghalita, vulgarly ghiliya, is a kind of grass from which baskets are woven.

## VIII.

# Tasnīf.

مع تا دختر دیدم در رالا کشون .. حلیمه وسلیمه و زر افشون سع تا بوسه خواستم از هر سمّا شون .. سه تا بوسه دادند روی قبها اشون مدی تا بوسه دادند روی قبها اشون دی شوم

#### IX.

# Tasnif.

عصر بود اسبش نسترن \*]

عصر بود اسبش نسترن \*]

یکسی ماه بلنده در آسمان است کرکو
عجب گهپ ه گلسی همسایه مان است کرکو
سر کوه بلنده الله اکبرر کرکو
بدیدم دختری همپرای و مادر کرکو
سلام بهادر چشهم بدختر کرکو
فدای مادر و شیدهای دختر کرکو
وفا کردی به ن آخ خوب کردی کرکو
جفا کردی به آخ خوب کردی کرکو
الله که مادر قربان دختر ترکو
د عالم محبرت چکارم کردی کرکو
سر راهم دوتا شد آی وای بر من کرکو
سر راهم دوتا شد آی وای بر من کرکو

<sup>1</sup> Qup, "cheek." "They gave me their cheeks to kiss." 2 Kur, in the dialect of the Lulis, is a small boy or girl.

 <sup>3</sup> Gump, a bunch of flowers. A plump boy is called gump-i gul.
 4 Ham-pā, "with."

<sup>5</sup> My road became divided, i.e., I fell in love both with the mother and the daughter.

# X.

# Taşnīf.

## XI.

# Tasnif.

کمدي ولا که چه مشتاق و پريشان بودم چون برفتي زبرم قالب بيجان بودم روز وشب نهي کسودم جان خود بسی فرسودم گرچه بصد رنج ومعی گشتیم ما دور از وطن با لطف الهي کمدیم ما بدین در نه پی حشمت و جالا کمدلا ایم ما بدین در نه پی حشمت و جالا کمدلا ایم فیر از تو نداریم فریادرس ای خدا بینای کمدلا ایس که از بد حادثه اینجا بپنای کمدلا ایس می ای خدا بفریادم رس ای خدا بفریادم رس فیر از تو ندادم دل بکس فیر از تو ندادم دل بکس فیر از تو ندادم دل بکس خیر رضا ومرحها برهمه باز میکنی چشم رضا ومرحها سدهه باز میکنی چشم رضا ومرحها سدهه باز میکنی

<sup>1</sup> Va understood. 2 This line has no clear meaning.
3 These lines are from  $H\bar{\sigma}fiz$ .

XII.

Tasnif.

گر بشکافذه سر و پای من .. جزتو نبینده در اعضای من شده میخواهدت

XIII.

Tasnīf.

هر دم ازین باغ بري میرسد . قازه تر از قازه تري میرسد حبیب مني هاي . طبیب مني هاي

XIV.

Tasnif.

ميديرم وفدايت ميشم خبر نداري؟ .. قربان قد و با لات ميشم عبر نداري؟ اقا جان خبر نداري؟ .. دلبر جان خبر نداري؟

XV.

Taṣnāf on Moti Jan.1

دیشب من و دل بقول آن عهده شکس در گوچه آن انقطار کردیهم وطسن مت متیجان ۵ بخ بلی درده بجان آخ بلی مدرده میسود گربلا شیرواز میشد بی بلا مدرد هندوستان شیراز میشد گلستان می متیجان آخ بلی درده بجان آخ بلی بندر نهیوم ۵ که راه بندر دوراست قسم میخورم که آب بندر شوراست

Moti Jan was a famous Indian courtesan who went to Shiraz.
 Mut Muti Jān—the lady's name.

<sup>3</sup> Na-mīram = namī-ravam.

مت متیجان آخ بلسی .. آرام جان آخ بلسی بسر مزن ای کوچکو تیده الله الله الله مزن آخ کوچکو زلف سیدا از را مت متیجان آخ بلسی .. آرام جان آخ بلسی بسر مزن مزن مزن مزن مینای ایم بایت آخ بلسی شدانه مزن ای کوچکو زلف نارنجسی مت متیجان آخ بلسی .. دردت بجان آخ بلی ابسو ببیان ببیان ایم بازان دارد شیرین ببیان ببیان هوای زیتون دارد مت متیجان آخ بلسی .. آرام جان آخ بلسی مت متیجان آخ بلسی .. آرام جان آخ بلسی درش در طرف چهن بتی خوابید یکتا پیرهن آخ بلسی ترسم که بوی نسترن از خواب بیددارش کند ترسم که بوی نسترن از خواب بیددارش کند مست است هشیارش کند .. با غهردی بجان آخ بلسی متیجان آخ بلی

#### XVI.

# Tasnif.

دیشب سعسري در کوچه وا شد .. شخص عسوبي وارد بهسا شسد اطاق پنجسدري قبلسه نما شد .. توي زیر زمینسي دو پام 7 هوا شد دستمال یارم گم شده زیر درخت گل .. یارم قدری دلخور شده چچه میزند بلبل

## XVII.

# Tasnif.

در میان کُس و کون جنگ افقاد . داوري بردند بیش کیسر گفت و کس خوب است اما گفته اند . احسن الاشکال شکل مستدیر "

<sup>1</sup> Tita vulg., a gold ornament for the hair. 2 Vulgar for siyāh.

<sup>Enamel work.
Hava here = khiyal.
The allusion is not clear.</sup> 

Yak-tā pērahan, adj. 'with nothing on but a chemise.'
 Pām for pā-am.

#### XVIII.

فرمان فرماى كلاه نددي أن بدكردي شيواز آمدي بغيالت اينجا كرمانه ي ن بغيالت اينجا كرمانه ي بغيالت

#### XIX.

Verses by a Dervish to extract money from a British Consul.

دوشینه گفت شوخم با حالت پریشان .. در خانهٔ تو جانا من سیر گشتم از جان سیم معاش دانم در دهر می نداری .. حالت بگویه قونسل ایکن زخلق پنهان

#### XX.

Taṣnīf-i Ḥusain-i Lūtī.

<sup>1</sup> Kulāh-namadī: contrary to the usual custom of  $\underline{Kh}$ āns he used to wear a Persian felt hat.

<sup>2</sup> Kirmān-a = Kirmān ast. 3 Kūn-a = kūn ast. The Shirazis pride themselves on being men and look down on the quiet Kirmanis who are mostly weavers.

<sup>4</sup> Also in Arabic Jais.

병원 선생님은 사람이 아무리를 하는데 되는데 그는 것이 되는데 나는데  7. Notes on the Freshwater Fauna of India. No. I.—A variety of Spongilla lacustris from Brackish Water in Bengal.—By N. Annandale, D.Sc., C.M.Z.S.

Thanks to Carter's classical memoirs, the Freshwater Sponges of India are better known than most of the animals which inhabit our Indian tanks. In Bombay, Carter examined five species, basing on them the researches which laid the foundation of the scientific study of the Spongillidæ as living organisms. Two species have been recorded from Calcutta by Weltner, and two by Bowerbank from Central India. The following list, based mainly on the third part of Weltner's "Spognillidenstudien," shows the distribution, in India and in the world, of all the forms as yet known to occur as members of our fauna:—

#### INDIAN SPONGILLIDE.

#### Genus Spongilla.

1. S. alba, Cart. ...

2. S. bombayensis, Cart.

3. S. carteri, Brok.

4. S. cerebellata, Bwrk.

S. cinerea, Cart.
 S. decipiens, Weber

7. S. lacustris, auct.

Genus Ephydatia. 8. E. plumosa (Cart.) ... Bombay.

... Bombay.

... Bombay, Chota Nagpur, Central India,
Calcutta; Madura (Malay Archipelago),
Mauritius, Eastern Europe.

... Central India.

... Bombay; Celebes, Flores, N. America.

... Calcutta; Celebes.

... Lower Bengal; Europe, N. America, Northern Asia, Australia.

... Bombay; N. America.

The following species have been recorded from countries near India and will probably be found to belong to the Indian fauna:—

Spongilla sumatrana, Weber Ephydatia fluviatilis, auct.

Sumatra.

... Eastern Asia, Europe, N. America;
Australia.

blembingia, 5 Evans ... Malay Peninsula.

During a recent visit (January 28th-30th) to Port Canning in Lower Bengal, I was much struck by the enormous number of sponge-gemmules which formed a scum on the surface of some of the shadeless brackish pools so numerous in the neighbourhood. These gemmules originated in a Spongilla which incrusted the stems of plants growing in the water and sticks which had fallen into it. Some of the pools were already drying up and the sponge was beginning to be exposed to the air. At one point I saw specimens which appeared to have been carried some distance from the tank by a gale of wind and were hard and dry.

<sup>1</sup> Ann. Mag. Nat. Hist., 1847, 1849, 1856, 1859, 1874, 1881.

<sup>&</sup>lt;sup>2</sup> Wiegm Archiv. f. Naturgesch. LXI, 1895.

<sup>3</sup> Proc. Zool. Soc., 1863.

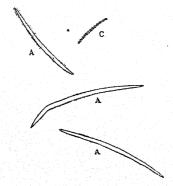
Carter regarded this form as no more than a variety of his S. alba, (1881).

<sup>5</sup> Quart Journ Micr. Science, 1900.

I have made a careful examination of living and preserved material, and I cannot find any specific difference between this sponge and the widely-distributed *Spongilla lacustris*, which is not, however, usually regarded as a tropical form. It may be convenient, for the sake of reference, to give the form a varietal name.

Description of S. lacustris var. bengalensis—

Texture firm, resistant, fibrous. Thickness never more than half Habit incrusting; without branches, entirely surroundan inch. ing support; pores and oscula inconspicuous; surface smooth, rounded. Colour flesh-colour or dull-green. Gemmules numerous, disposed throughout the sponge except on the surface, of two sizes, thickly coated, with a single funnel-shaped opening, spherical. Spicules: -- skeleton spicules smooth, slender, cylindrical, feebly curved, very rarely bent at an angle, abruptly pointed, joined together in strands to form a reticulation in which the gemmules rest: flesh spicules very slender, cylindrical, feebly bent, pointed, minutely spineal throughout, numerous: gemmule spicules slender, cylindrical, sparsely covered with fine, pointed, recurved spines, which are more numerous towards the ends than at the centre; the spicules very numerous, arranged tangentially, not penetrating coat of gemmule.



A. = skeleton spicules. C. = flesh spicule.

Length of skeleton spicule ... 0.3 mm.—0.4 mm.
Length of flesh spicule ... 0.14 mm.
Length of gemmule spicule ... 0.16 mm.
Diameter of larger gemmule ... 0.9 mm.
Diameter of smaller gemmule ... 0.6 mm.

The most notable peculiarity of this variety is the total absence of branches, but in certain forms of the species the branches are better developed than in others. S. lacustris is so variable

<sup>1</sup> Ledenfeld describes his S. lacustris var. sphaerica, from New South Wales, as "ohne Fortsätze, kuglig oder eiforming," (Zool. Jahrb. part 2, 1887). The exact position of this form is doubtful; Weltner is not sure that it belongs to the genus Spongilla, no gemmules being available for examination.

that Potts, in his monograph of the Freshwater Sponges of the world, recognized six varieties in addition to the typical form. The Bengal form most nearly resembles his montana (from the Catskill Mountains, New York) as regards its spicules; but in the gemmule spicules the spines are more distinctly aggregated at the ends in the Bengal form. I regard the angularly bent skeleton spicule, of which I have only seen two examples, as an abnormality, The gemmules are very distinctly of two sizes, the smaller ones being less numerous than the larger ones. They are scattered indiscriminately through the sponge, and in both the opening is directed outwards. They are not found in groups, and have no large air-cells. Dried pieces of the sponge bear a close external resemblance to Weltner's 2 figure of part of a branch of Euspongilla lacustris from Germany; but there is in the centre of each of such pieces of the Bengal form a twig or grass-stalk which would be absent from European specimens. The green colour of the Port Canning examples was due to a multicellular alga 3 whose filaments ramified among the spicules. This alga was evidently growing with great activity, but it had only commenced to invade certain pieces of the sponge.

S. lacustris has been recorded from brackish water in Europe and possibly in Australia. The species is evidently adaptable, and its great fertility as regards gemmules, gives it every chance of a

wide dispersal.

The common sponges in the Calcutta tanks are S. carteri and S. decipiens. The former propagates itself during the winter months, by means of buds, and forms gemmules rather later in the year than does S. decipiens. By the end of January, specimens of the latter are usually reduced to mere skeletons containing these bodies, while even large examples of S. carteri are, at the same date,

either devoid of gemmules or contain only a few.

The life-history of these two forms differs also in other respects. The buds of S. carteri attach themselves chiefly to waterplants such as Pistia stratiotes and Limnanthemum and grow rapidly into globular masses, which may be six or eight inches in diameter. These gradually weigh down the leaves or roots to which they adhere, and finally sink them in the mud. The lower part of the sponge then dies, the cells probably migrating towards the upper part. S. decipiens, on the other hand, incrusts the lower part of the stems of reeds. bricks which have fallen into the water, and other sunk objects. Neither species is exposed to the air for any great part of the year in Calcutta, as both are said by Carter to be exposed in Bombay.

Both species shelter a number of Insect larvæ, some of which are generically identical with those found in the same position in Germany. A minute Naidomorph worm is abundant in the

<sup>1</sup> Proc. Acad. Nat. Science, Philadelphia, 1887.

Ent. Nachr. (Berlin) xx., No. 10, p. 150, fig. 7, 1893.
 Of. M. and A. Weber, Zool. Ergeb. Niederland Öst-Ind. Vol. 1, page 50, pl. V, fig. 1.

decaying tissues of older specimens, and appears to play an important part in the liberation of the gemmules. At Port Canning I found a crab of the genus Varuna concealed in considerable numbers among grass stems coated with S. lacustris. The relations between the Freshwater Sponges and the various animals associated with them is a subject to which I hope to return later.

8. Notes on the Freshwater Fauna of India. No. II.—The Affinities of Hislopia.—By N. Annandale, D.Sc., C.M.Z.S.

The genus Hislopia was founded in 1858 by Carter for a freshwater Polyzoon sent to him in spirit from Nagpur by Hislop the geologist; while in 1880 Jullien described a form, which he recognized in 1885 as allied to Carter's, under the name Norodonia, basing his diagnosis entirely on external characters. The systematic position of these Polyzoa has remained obscure. Stoliczka, who referred to the existence of Hislopia in Lower Bengal in his account of the brackish water Membranipora bengalensis, did not carry out his intention of describing its life history. A recent examination of living material from a tank on the Calcutta 'maidan' enables me to give a general account of the anatomy of Carter's species, H. lacustris, and to indicate its affinities in general and its relationship to Norodonia.

Carter, who regarded his new genus as allied to Flustra, described the colony as "spreading in aggregation over smooth surfaces, sometimes in linearly, but for the most part with no definite arrangement." In Calcutta the linear arrangement is far commoner than any other, but occasionally several zoecia are adjacent to one another in a transverse series. This may be due either to parallel branches chancing to approach one another, in which case there is no communication between the polypides, or to lateral budding. In any case the zoarium is flat and consists of a single layer of cells. The substance of the zoecia is transparent but stiff, while the thickened margins of the orifice have a deep brownish

tinge.

The individual zoecia are described by Carter as "irregularly ovate, compressed," and his figure (op. cit. pl. VII, fig. 1) shows that considerable variation in their outline is brought about by the pressure of neighbouring cells. Although he represents, in the same figure, a considerable flattened area between some of the cells, he does not note that their horny margin is of considerable width, and his fig. 2 is misleading in this respect. Moreover, the relative length of the spines at the angles of the thickened borders of the orifice is more variable than he indicates. In some zoecia they are very short, and occasionally two or even three of the four are vestigial. The large "stoloniferous holes" he describes and figures are a very marked feature; the actual plate being normal in character, although the depression at the base of which it occurs is of considerable extent. Even when the colony consists of a single line of zoœcia these depressions may be present on the sides as well as the extremities of each cell. They then indicate that lateral budding is about to commence; for although no aperture

Bull. Soc. Zool. France, 1880, page 77.
 Ibid. 1885, page 181.

<sup>1</sup> Ann. Mag. Nat. Hist. (3) I, page 169, pl. VII.

<sup>4</sup> Journ. As. Soc. Bengal. XXXVIII, (2), page 61.

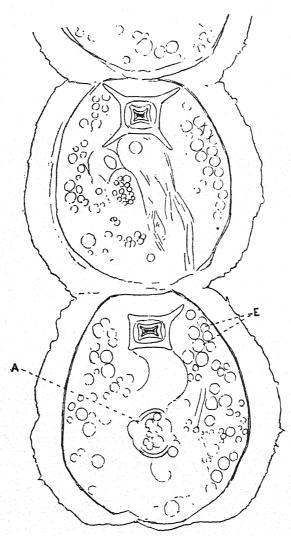


Fig. 1. Hislopia lacustris: two zocecia from the centre of the zoarium (drawn from life).

A. = unicellular alga in gizzard. E. = eggs.

as yet exists, a roundish mass of undifferentiated tissue on the inner wall of the zoœcia opposite their base represents the young bud. Occasionally a very short, flat creeping stolon is produced between two zoœcia.

It is only as regards the zoecia that it is possible to compare the diagnoses of *Hislopia* and *Norodonia*. The following is a

translation of that of the latter:

"Zowcia horny, creeping, strongly adherent to submerged bodies, originating one from another below the summit to form linear series, primitive axis of the zoarium rapidly giving rise to secondary, tertiary and other axes, these appear on a level with the upper third of the zoccium, sometimes on one side, sometimes on two; lateral margin thick, bearing a delicate membranous area, near the summit of which is the orifice." (1885).

Allowing for the dried condition of the specimens examined, this diagnosis applies equally well to *Hislopia*. In dried specimens of *H. lacustris* the front collapses below the margins, which then appear thickened, and the tubular character of the orifice is less conspicuous. No mention is made of the four "valves" which close the orifice in *Hislopia*; but they are extremely delicate membranous structures, which cannot be seen in dried specimens. For these reasons I regard *Norodonia* as a synonym of *Hislopia*. Whether Jullien's *N. cambodgiensis* is specifically identical with *H. lacustris*, it is difficult to say; but the author's figures bear a

close resemblance to dried examples of the latter.

As regards the polypide of H. lacustris, one or two important features may be noted. The lophophore is circular, not horse-shoeshaped as Jullien's (1885) copy of Carter's figure would suggest. There is no epistome. A folded collar, very conspicuous when the lophophore is in the act of expanding, exists and is well represented by Carter (op. cit. pl. VII, fig. 3). When the polypide is retracted, the aperture is closed by what appear on the surface to be four valves. Carter stated, and indicated in his figure, that the posterior of these was larger than the others and had a different character from them; but in the living animal the relative extent of these "valves" is by no means constant, even in the same zoecium at different times. Their nature is best indicated by a study of the young bud. Before the orifice is actually perforated its lumen is almost circular, the edge is hardly thickened, and there are no spines. At this stage no "valves" can be seen, although the collar, which is very long, may be already apparent. As an opening is formed, and as, simultaneously, its edges become more or less completely rectangular and stiff, the upper extremity of the walls of the orifice, inside the thickened rim, collapse together, and a slight transverse folding takes place, producing what appear on the surface to be regular flaps, although the folding is not sufficiently marked for the projections from the four sides of the orifice to have actually this character. These projections are the so-called valves. In such forms as Alcyonidium and Bowerbankia, the walls of the orifice close in more or less tightly above the collar when the lophophore is retracted, but no projections of this kind are formed, the aperture being circular and not having stiffened edges. In *Paludicella*, in which the opening is rectangular but without a thickened rim, the resemblance is much more striking. In *Hislopia* there are no peculiar muscles connected with the orifice, the structure of which is absolutely distinct from that of the Cheilostomes.

The tentacles are, as Carter says, "about sixteen," occasionally a little more numerous; but their number is not constant. When expanded they are long and slender. The pharynx is rather lengthy. Near its point of origin it is swollen slightly; but it becomes cylindrical again before entering the gizzard, which is spherical and bears from two to six greatly thickened ridges on its internal surface. The passage between the gizzard and the stomach is capable of some extension and bears peculiarly long and active cilia. The gizzard almost invariably contains a number of rounded green bodies, which appear to be unicellular algae. Sometimes these bodies remain in the gizzard unaffected for at least two days.

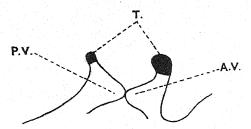


Fig. 2. Diagrammatic longitudinal section of the orifice, the polypide being retracted.

T. = thickened rim. P.V. = posterior valve. A.V. = anterior valve.

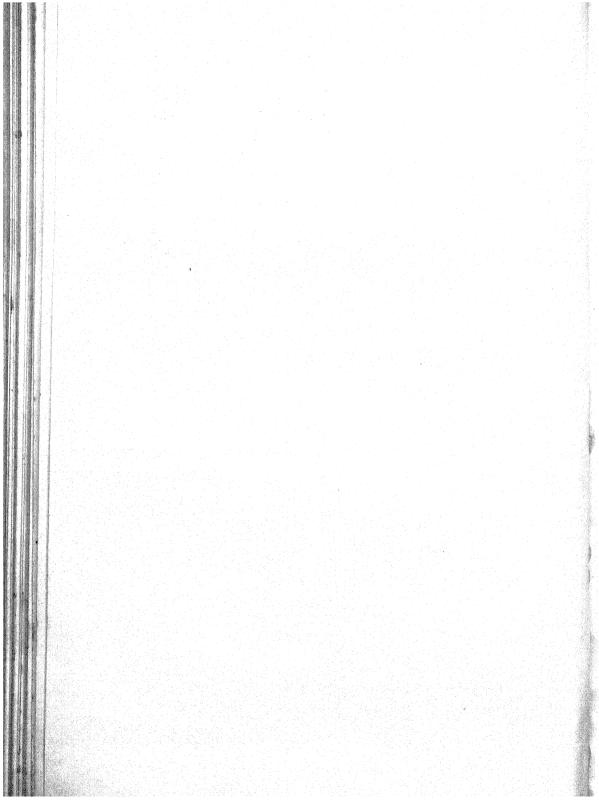
Those situated furthest down are in constant motion, being whirled round and round by the cilia in the passage between the stomach and the gizzard. Occasionally a movement of the whole alimentary canal causes some of them to descend into the stomach; but, owing to their spherical shape, the action of the cilia brings them back into the gizzard again. I am inclined to believe that these bodies are merely food which is waiting to be crushed by the gizzard, as some of them are always disappearing and the fæces afterwards are green. If so, the animal is able to save up an excess of food for some time in this mauner. The stomach, which has the usual characters, is well represented by Carter; but the intestine is a cylindrical tube when empty. The "globular, sometimes elliptically dilated portion" is merely the temporary swelling caused by the presence of fæces, and several such swellings may occur. The rectum is shorter than the intestine. The anus is, of course, external to the lophophore.

The intertentacular organ is large, and the ganglion appears to be normal. The muscular system is well developed; but I can-

not detect a definite funiculus.

The ovaries are attached to the wall of the zoccium on both sides of the polypide and are of considerable extent. Spermaries occur in much the same position, but neither kind of gonad can be said to have any very definite arrangement, although both are found together. Apparently the female elements, as a rule, mature earlier than the male. When the former are ripe a "brown body" is formed and they escape through the orifice, occasionally, at any rate in captivity, as unsegmented ova, but this may be due to abnormal conditions of life.

The exact position of *Hislopia* has hitherto remained uncertain; but I think there can be little doubt that it is a somewhat aberrant representative of the Ctenostomata, the orifice having undergone special modification, possibly in connection with life in fresh water. Probably the genus should be regarded as constituting a distinct family closely allied to the Paludicellidæ.



9. Some Instances of Vegetable Pottery.—By DAVID HOOPER.

Certain vessels are frequently made in India from the dried fruits of trees and used for holding water and liquid substances. Familiar examples are found in the bottle gourd (*Lagenaria vulgaris*), the bel (*Ægle marmelos*), and the cocoanut (*Cocos nucifera*). An aperture is made at one end of the fruit, the pulpy portion is removed by excavation and washing, and the dry, hard shell forms a bottle-shaped vessel which serves many useful

purposes.

While many of the poorer villagers in India take advantage of these naturally-shaped vessels, a peculiar use is sometimes made by others of a glutinous and plastic material entirely of vegetable origin which, when formed by the art of a potter into cups, saucers, and jars, and dried in the air, is a substitute for earthen-There is more than one instance in history of vegetable matter being confused with earth or clay. So long ago as the fifth century, Prosper Alpinus noticed that the powdered pulp of the fruit of Adansonia digitata, commonly known as the baoab, was sold as Terra Lemnia to those unacquainted with the original article. The genuine Lemnian earth of the Greeks, or Sphragide, was a yellowish-grey earth or clay found in the Island of Stalimene (ancient Lemnos). It was regarded as a medicine in Turkey, and was esteemed as an antidote to poison and the plague. Another instance of confusion between vegetable and mineral substances is the name Terra Japonica, formerly applied to the extract or cutch of the Uncaria plant, which was supposed to come from Japan. The analogy between cutch and clay is shown by the fact that the former can be readily moulded into figures and vessels which retain their shape when dried in the sun. Dr. Annandale, during his recent visit to Ramnad in South India, found the villagers adepts at making toy images of black catechu, and illustrations of their workmanship will be given in a future number of the Memoirs of this Society.

The powdered root of the turmeric (Curcuma longa) was another substance formerly regarded as of mineral origin and known as Terra Merita, probably on account of its resemblance in

colour to ochreous minerals.

The pulpy parts of various astringent fruits have the peculiar plastic property of clay, and by hardening in the air, after being moulded into pots, they are impervious to water, and have the additional advantage that they can fall to the ground without being broken.

The use of the fruit of the aoula for making pottery was described in 1896 in a letter from Mr. James Martin, written from the Tumgaon District, Raipur, Central Provinces, to the Reporter on Economic Products to the Government of India. He writes: "I have come across a peculiar ware that is made by the Banjaras "of the district from the fruit of the aoula (*Phyllanthus emblica*). "The fruit is collected and dried. It is then boiled in water until "quite soft and pounded, the stones removed and the pulp beaten

"up and worked with the hands into a thick, dark-brown, sticky mass. When this is quite ready, the manufacturer takes an earthen vessel—any shape that pleases him—and covers it all over with a thick layer or coat of the pulp. This is then put aside to set a bit, and when hard, rude devices are stamped round the neck and shoulders of the article, which is then set aside to dry. When quite hard, the gharra inside is broken and the pieces removed. These vegetable pots are sold according to size from 4 annas to 8 annas each, and are much sought after by the people of the place. Oil and ghee stored in them are well preserved

"and show no evidence of rancidity."

In another letter, Mr. Martin describes the process in greater detail: "I sent for some Banjaras and got them to stay for four or "five days at my camp and prepare, in my presence, first the pulp of "the Phyllanthus emblica fruits, and then saw them mould and "form the jars in the various stages of the process. On the first "day I sent the men to collect fruit and they brought in a large "basketful. The same evening this was put into large mudden (?) "qharras with cold water sufficient to cover the fruit, placed over "fires and boiled till soft. The gharras were then removed and "the contents emptied into a basket and allowed to drain and cool. "On the following morning, the fruit was broken by hand, each "into five or six pieces, the fleshy pericarp dividing easily into "sections, the stones as they were removed were thrown aside, and "the fruit, spread on a mat, was placed in the sun to dry. "day after, the gharras were three parts filled with cold water and "placed over fires. As soon as the water boiled, the previously "boiled and dried fruit was added and allowed to cook till soft "again. The vessels were then taken from the fires and all liquor "carefully drained off. This was kept in a separate vessel for "future use. A small quantity at a time of the fruit was next "taken and reduced to a paste on a stone slab with a muller, a "little of the fruit liquor being added to keep the pulp soft and of "a suitably plastic consistence. The moulds-in this case small " earthenware gharras—were next attended to. The outside surface "of these was first carefully washed, and then coated with a paste "composed of ashes of burnt cowdung and the fruit liquor, and set "aside to dry. When all was ready, the fruit pulp in small quanti-"ties, as much as could be manipulated by one hand, was taken and "dubbed on with the right hand, the operator holding the mould "in his left.

"He commenced by covering the mould round the neck and then worked downwards finishing off at the bottom, spreading and smoothing the coat with his hand, which he every now and again dipped into the fruit liquor. When the entire surface was covered with pulp about inch thick, the mould was stood (?) neck downwards on the ground in the sun to dry. It was left there all day but brought in at night. On the following morning a second epat of pulp was plastered on as before, and the pot was again left out all day in the sun, being removed at night. On the third day, after having stood in the sun all day, the earthen moulds

"were broken by being tapped with a stone inside, and the pieces "removed. The necks of the jars thus formed were then moulded by hand with the addition of more pulp, and then the entire jar both inside and out was smoothed and finished off with a coat of "pulp thinned down with the fruit liquor, after which the jars were again set aside to harden. When hard enough to handle—which was by evening—an attempt was made at ornamenting the neck of the jar by impressions left by pressing a thin round stick against the yet soft and yielding pulp. Kowrie shells and the red seeds of "Abrus precatorius are often imbedded in pulp round the neck to beautify it. The Banjaras declare that the manufacture is stopped during the rains."

The aoula tree is very abundant throughout the forests of tropical India and Burma, and the fruits, known as Emblic Myrobalans, are frequently employed in medicine and for tanning. The advantages which the fresh pulp possesses for preparing vessels might well be recommended for more extensive trial, and probably the fruit of the gab (Diospyros embryopteris) could be

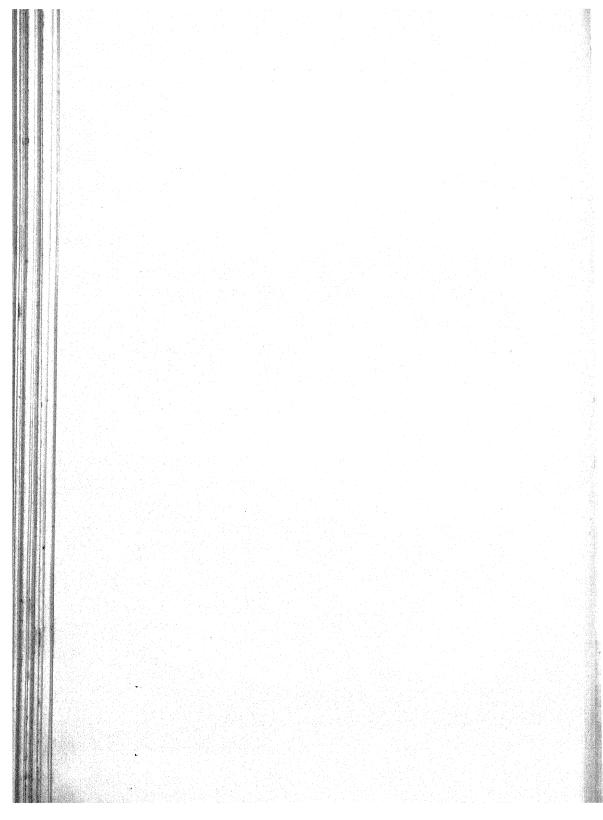
similarly utilised.

Another material used in making jars is the root of the great asphodel (Eremurus aucherianus, Boiss.) The fleshy root of this plant, by drying in a sand-bath and grinding, is prepared into a flour which, when mixed with hot water, yields a most tenacious vegetable glue with which the Persians make great vessels for holding oil and clarified butter The native cobblers employ it in preference to animal glue in their work. Dr. J. E. T. Aitchison describes the method of making these vessels in Persia: "The "tenacious gum is painted over a hollow earthen mould that has a "single layer of some coarse country cloth covering it; on this "cloth, layer after layer of the glue is painted until a sufficiency is "reached; this forms, when dry, a parchment-like skin, the mould "is then broken up and removed through the mouth of the jar, "and then usually the jar is sewed into a goat's hair sack. With "ordinary moisture, or the amount of moisture likely to affect the "jar through the goat's hair covering, no harm is likely to accrue, "but if the jar is allowed to stand in water for days, it will in time "dissolve or melt away."

Sarish-i-narm is the name of the flour made by grinding down the dried roots of Eremurus with the intention of converting them into glue. Sarish-i-kaki is the vegetable glue ready made for use. Daba-i-sarish are the vessels made in the above manner. There is

said to be a large trade in this material in Khorasan.

<sup>1</sup> Notes on Products of Western Afghanistan and North-Eastern Persia, p. 66.



10. Notes on some Sea-Snakes caught at Madras.—By T. V. R. AIYAR.

### Communicated by H. MAXWELL LEFROY.

The almost unbroken coast of the port of Madras extending from Cassimode on the north to Mylapore in the south, seems to afford but little shelter to these marine reptiles, the favourite haunts of which are salt-water estuaries and tidal streams. They are said to be found in shoals along the Burmese coast near the mouths of the river Irrawadi and the Sunderbunds of Bengal. However, with all its disadvantages as a locality in which to carry on such an investigation as this, I was able to procure from the Madras coast a fairly good number of specimens during the comparatively short period of my work. Of the specimens collected, the majority were got along the rock-bound coast of Royapuram and from within the artificial harbour, where young ones are often found swimming in their characteristic fashion.

There seems to be no particular season of the year when seasnakes are found; all the year round hardly a day passes without some fisherman coming across specimens of these snakes. During the cold weather, however, viz., from the month of October to February, they are found in greater numbers. Big snakes generally approach the shore at night and this fact is corroborated by the experience of the fishermen who often fish at night. During the rainy weather when the sea is rough, many of them are dashed ashore and found stranded on the beach, when they easily become a prey to the eager sea-gull, which I have seen eat-

ing them.

Sea-snakes are generally hauled up in the big fishing nets employed by the Madras fishermen in the mid-bay. Among the various undesirables which the net raises up, as urchins, corals, sea-stars, etc., at each drawing of the net, sea-snakes invariably come up, and unless anyone interested in these succeeds in prevailing upon the fisherman to retain these snakes, they are thrown overboard with the rest of the useless lot. With their natural hatred and vulgar antipathy towards these reptiles, it requires no ordinary promises of presents to induce these illiterate men to fetch home specimens of snakes. Sometimes a fisherman, induced by payment to catch them, brings big eels and specimens of Chreshydrus granulatus; and on being told that they are not the right creatures wanted, he loses his confidence in the offer and gives up collecting them.

A few general observations may be recorded as regards habits and other features which I have been able to make during a recent

investigation.

The peculiar habits and surroundings of some of the species have been found to have brought about several marked variations in the general form of the body. The most striking of these is the peculiar modification of the anterior portion of the trunk in some species of *Hydrophis*. It may be suggested that the small

head with the attenuated and cylindrical neck is specially adapted to penetrate into the crevices and crannies among the rocks in search of prey. It may also be urged that the modification serves the purpose of an offensive organ also, inasmuch as the prey could be easily caught and poisoned by an agile dart of the anterior portion, without the thick belly exerting itself much. The graceful Distira viperina Bouleng, with its unique ventrals adapted to a slightly regular motion on land, is, I think, a shallow water form often crawling along the sandy bottom of the littoral area. I have seen specimens crawling on the sand after being caught.

With regard to coloration, the young ones are, as a rule, found gracefully adorned with bright bands and streaks, while as the snakes grow old the colour becomes dull and the bands, streaks, and other markings appear very faint and sometimes even disappear. This is especially the case in *Enhydris curtus* Merrem, *Enhydrina valakadien* Russell, *Distira cyanocincta* Russell, and *Hydrophis cantoris* Günth. The arrangement and number of the head shields and scales which are taken as the criteria in determining the specific characters are, in many cases, found to be very variable. In almost all the species described above, the number of scales vary from those given by Mr. Boulenger in his

descriptions.

Though one and all the species are poisonous, the poison fangs are not so very well developed as in terrestrial snakes. They are small and not markedly differentiated from the maxillary teeth behind them. In one species, however, viz., Enhydrina valakadien, they are comparatively larger. The terminal end of the poison duct in these snakes is found to be very convoluted. fangs being small, the puncture caused by the bite must be very minute; nevertheless the effect of the bite from a toxicological point of view, is said to be very deadly. Some of the most eminent medical men, who have been recently conducting a research into the action of snake venoms, have found out that the most deadly of all substances of this nature, which they have examined, is the venom of the sea-snake Enhydrina valakadien. The native fisherfolk are not unaware of the poisonous nature of these snakes; in spite of this knowledge they are always found carelessly playing in the waters, even of localities which are said to be the special haunts of sea-serpents. And it is none the less curious to note, that cases of bites by sea-snakes are very rarely heard of; evidently they attack man very seldom. Here is what one observer 2 says: "Although all these are poisonous, they rarely attack man. I have seen scores taken by careless sailors on the north-west coast of Australia without any bad results. Several instances of fatal bites have been recorded, one having caused death in an hour and a quarter." A case of fatality by

L. Rogers in Proc. Roy. Soc. lxxi. (1903), p. 481 and lxxii. (1903),
 p. 305; Sir Thomas Fraser and R. H. Elliot, in Phil. Trans. Roy. Soc. B. 197,
 (1904), p. 249.
 Basset Smith, M.R.C.S., R.N.

sea-snake bite came to my notice during my investigations. A fisher-boy was bitten by a slender-necked species while on a catamaran in the bay, at the Royapuram coast. The boy did not feel the bite, though he knew it was a snake, but gradually became pale and unconscious. He was brought ashore, at once and all sorts of restoratives and handy medicines were resorted to, but the boy expired in the course of the next day. The natives regard the species Hydrus platurus Russell as the most deadly of all sea-snakes, next in grade being the slender-necked forms to which they give the name of Molagadien pāmb. Implicit faith in the curative effects of sacred murmurs and chantings is entertained by almost all fishermen. An experiment in the way of mutual poisoning was tried by making the jaws of a healthy living specimen of Enhydris curtus close on the body of a young specimen of Enhydrina valakadien which was very active at the time. For some time the latter exhibited no sign of poisoning or ill-health, but the next day it became paralysed and died. This killed one had been living for a long time in captivity, and was apparently healthy when bitten.

In the matter of food, all these snakes more or less confine themselves to a diet of fish. Of all the species, Enhydrina ralakadien seems to be the most voracious. In almost all the specimens of the species that were opened, several fish, half digested, were found, the fishes being chiefly spiny ones. In some cases small crustaceans were also found in the alimentary tract. The slender-necked species, which cannot swallow big fishes, are found to feed on young and small fish. I am also inclined to think, that these snakes haunt coral reefs and feed on the minute polyps.

Female specimens, with their oviducts crammed with well-developed eggs, were chiefly found during the cold months from

October to January.

The peculiar way in which the ecdysis of the epidermis takes place in these marine reptiles is well worth a note. Unlike the terrestrial snakes which periodically shed their skin as a single piece, these snakes have the habit of casting away the epidermis piecemeal. Consequently a thorough moult takes longer time than in ordinary land forms. During the period of moulting, the snakes are found to be very inactive. It seems to me a mystery why such a method of ecdysis should be the rule in these marine snakes. The following feature which I observed, however, makes me hazard the conjecture that the sea-water may play a part in this process of piece-by-piece moulting. Some specimens of sea-snakes, which I had kept in captivity in fresh water, underwent this process of moulting more or less like the land snakes, the epidermis coming off almost as a single piece.

Several specimens of the snakes collected, especially young ones, had foreign organisms attached to the surface of their body. The chief of these organisms are the barnacles, both the stalked and the sessile forms (*Lepadidæ* and *Balanidæ*). These were abundantly found in young specimens of *Enhydrina valakadien*. In a specimen of *Enhydris curtus* the body was completely

fringed with hydroid colonies like grass. A specimen of Distira viperina was found to have attached to its body the calcare-

ous skeleton of a polyzoon colony (Membranipora?).

The way in which sea-snakes behave when thrown ashore, and their habit while in captivity, are not uninteresting. Once out of their native element, they generally become quite helpless and appear blind, except Distira viperina. They are unable to progress on land because of the want of big ventrals. None of these ever attempted to attack, but they often try to bite and injure their own bodies. I tried to feed some in captivity, but with very little success. Dr. Fayrer says that they die very rapidly in captivity, but I was able to keep some alive in captivity for a fairly long time. A specimen of Enhydrina valakadien, 1' 63" long, lived in fresh water from the 12th of September to the 9th of November, which is nearly two months. One specimen of Enhydris curtus, a foot long, lived from the 19th September to the 12th October,—nearly a month. Another specimen of the same species 2' 9" long, lived for nearly 20 days, viz., from the 26th December to the 15th January. A specimen of Distira jerdonii Russell, 3' 21' long, lived from the 9th November to the 14th January. All these were kept in open tin buckets half full of fresh water, the water being changed now and then. Other species were also tried, but none lived any appreciable time in captivity. In captivity all were active and quite at home, and it was probably starvation that killed them, since they refuse to feed in captivity.

Here is a list of some of the Tamil names by which seasnakes are known in Madras:—Nulla Wahlagille pam of Russell is called Karivāla pāmb. Species of Enhydris are called Potta pāmb (meaning blind snake). E. valakadien is called Vālakadien pāmb (meaning the net-biting snake). The slender-necked ones are called Molakadien pāmb: also Kodal nagom (meaning seaserpent). The long and banded ones are called Kadal sarai

pāmb.

# 11. Wormia Mansoni: a hitherto undescribed species from Burma. —By A. T. Gage.

In May 1905, Mr. F. B. Manson, now retired from Government service but then Conservator of Forests, Tenasserim Circle, sent to the writer a species of Wormia, which could not be identified with any species in the Herbarium of the Royal Botanic Garden, Calcutta. More material of the same species was sent in the following July and September by Mr. Manson's successor. This allowed of a fairly complete description of the species being drawn up, which is given below.

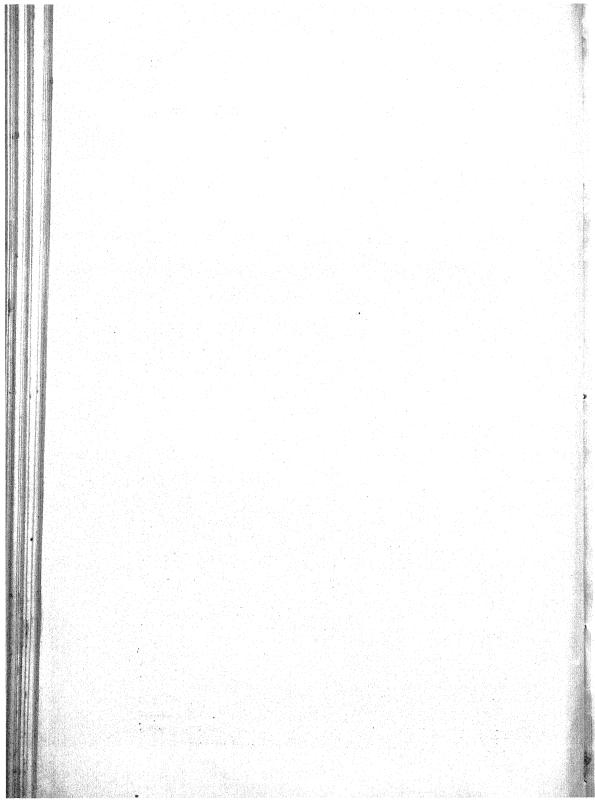
The writer is indebted to Colonel Prain and Mr. J. F. Duthie for having kindly compared the species with the Wormias in the Kew collection, with none of which has it been found to agree.

Wormia Mansoni.—Frutex primo cum foliorum nascentium costis costulisque subtus pilosis denique omnino glaber; ramuli teretes brunnei lenticellati. Folia alterna, breviter petiolata, sine ala stipulari, elliptico-lanceolata, apice acuta, basi cuneata, serrata, coriacea, supra nitida, infra surda, nervis lateralibus 12-15. Petiolus 1—1.4 cm. longus; lamina 13—16 cm. longa, 4.5—6.5 cm. lata. Flores 4-5 cm. lati, in racemis terminalibus 3-4 flores gerentibus dispositi, alabastro in bractea decidua incluso. Pedunculi 2-3 cm. longi. Sepala 5, in alabastro imbricata, carnea, ovato oblonga, tria interiora circa 1.7 cm. longa, 1.5 cm. lata, duo exteriora minora. Petala 5-7, alba, undulata, integra, obovata, 2-3 cm. longa, 1 cm. lata, in alabastro imbricata. Stamina numerosa. 7-10 mm. longa, filamenta fere aequalia 3-serialiter disposita, antheris per ostia terminalia dehiscentibus. Carpella 5 raro 6, subtrigona, vix in axe cohaerentia, staminibus obtecta; stigmata tot quot carpella, subulata, reflexa; ovula numerosa bi-serialia axillariter disposita. Fructus 2-2.5 cm. crassus; carpella maturescentia 2-3-sperma, carnea, haud intorta, vix cohaerentia, basi staminibus persistentibus cincta et calyce carnea persistente inclusa. Semina reniformia, fusco-brunnea, rugulosa, 5 mm. longa, 3 mm. lata, in arillo (albo?) tenaci inclusa.

In ripis fluminis Yunzalin, prope confluentem cum Salween,

Tenasserim, Manson!

Up to the present the species of the Eu-Wormia section, found in Ceylon and the Malayan Peninsula, which have been described are:—Wormia triquetra Rottb., Flora Brit. Ind., i. 35, from Ceylon; W. pulchella Jack, Flora Brit. Ind., i. 36, W. meliosmæfolia King, W. Scortechinii King, W. Kunstleri King, Journ. Asiat. Soc. Bengal, lviii. II, 365-366, all from the Malayan Peninsula. The present species, which extends the distribution of the genus northwards into Burma, is readily distinguishable from those just mentioned W. triquetra, W. Scortechinii and W. Kunstleri are trees, the two latter at least 20 metres high, while W. Mansoni is a shrub. W. meliosmæfolia is described as a small tree, and W. pulchella as a shrub. The former differs from W. Mansoni in having 12 carpels, the latter in having obvate-oblong entire leaves with only 5-7 pairs of nerves.



 Testudo baluchiorum, a new species.—By N. Annandale, D.Sc., C.M Z.S., Deputy Superintendent of the Indian Museum.

DIAGNOSIS OF Testudo baluchiorum, sp. nov.

Shell arched transversely and longitudinally, slightly more than half as deep as long; anterior margins slightly reverted, serrated; costals almost vertical. Head small, broad, covered with irregular scales above; interorbital region of the skull almost flat, but sloping a little towards the nasal opening; upper jaw tricuspid, feebly serrated; occipital process short, barely extending beyond the condyles. Four claws on each foot; the fore-foot with about six rows of large imbricating scales on the anterior surface; the hind foot with three spur-like tubercles on the heel; two large subtriedral tubercles, surrounded by smaller ones, on the back of the thigh. Tail short, with a small apical tubercle. Shields of carapace concentrally striated, with a flat sculptured central area; supracaudal single, almost vertical. Plastron truncated in front, probably notched deeply behind. Colour of shell pale brown, irregularly marbled with darker brown.

Locality.—Baluchistan (A. W. Murray). A stuffed specimen in the Indian Museum, identified by Anderson as T. horsfieldii.

Remarks.—This species may be distinguished from the Afghan Tortoise (T. horsfieldii), the only other species of its genus with four claws on all the feet, by its deeper carapace, which is not flattened on the dorsal surface, and by the characters of its skull. In T. horsfieldii there is a marked transverse depression across the interorbital region and the sides of the upper jaw are smooth. The new species resembles T. zarudnyi Nikolski in several of its characters, notably in its almost vertical costals The description of the latter Tortoise, described from Eastern Persia and possibly occurring in Baluchistan, is given below.

As it seems probable that the type of *T. baluchiorum* is abnormal in certain respects, I have given a very brief and guarded diagnosis of the species it represents. The anals are almost entirely absent, being represented by several small, irregularly shaped tubercles, which separate the femorals from one another at their anterior extremity. There is no evidence that this is due to injury, as the place where the missing plates should be is covered with normal and apparently healthy skin.

Dimensions of the Type of T. baluchiorum.

 Length of shell
 ...
 211 mm.

 Depth
 ...
 ...
 111 ,,

 Breadth
 ...
 ...
 160 ,,

 Length of skull
 ...
 35 ,,

 Maximum breadth of skull
 ...
 30 ,,

For comparison the diagnosis of Testudo zarudnyi Nikolski is appended. It is quoted from Nikolski's paper in the Annaire du Musée Zoologique de l'Académie, St. Pétérsburg, 1897. I am

much indebted to Mr. G. A. Boulenger, who has sent me a copy

of this paper on loan.

"Testudo affinis Testudini iberæ Pall., a qua carapace lateribus compressa, scutis margino-lateralibus perpendicularibus, supra non visis, scuti margino-brachialis anterioris margine inferiore valde assurecta, unguibus brevibus obtusissimis, rhinotheca dis-

tincte denticulata, differt.

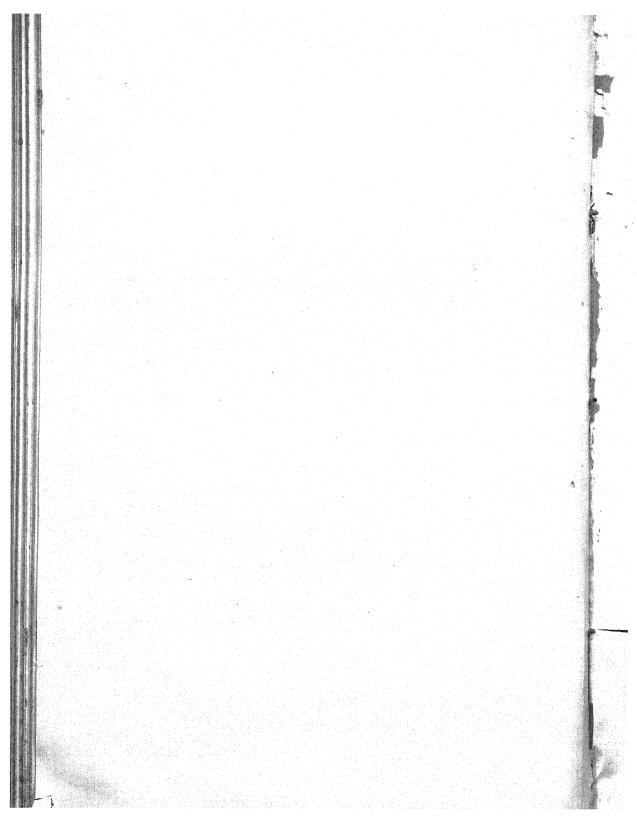
Testudo, latitudine carapacis in media parte 1.5 in ejus longitudine; margine ejus posteriore expanso, parum assurrecto; marginibus scutorum margino-femoralium, incissura magna inter se discretorum, rotundatis; margine scuti margino-brachialis anterioris valde assurrecto, supra posticeque spectante; scuto nuchali elongato, ensiformi; scutis margino-collaribus supra duplicibus; scutis margino-lateralibus perpendicularibus, supra non visis; scuto supracaudali indiviso, sub angulo 45° ad planitiem horizontalem posito, longitudine ejus scuti longitudini scuti vertebralis primi aequali; margine anteriore scuti vertebralis primi rotundato, nec angulato: latitudine omnium scutorum vertebralium longitudinem corum multum superante, latitudini scutorum costalium fere aequali; margine posteriore plastronis inciso, ad suturam inter scuta femoralia et abdominalia mobili; margine anteriore plastronis inciso, sutura inter scuta analia cum sutura inter scuta femoralia multum quam sutura inter se abdominalia breviore, scutis axillaribus unguinalibusque parvis angustis, sutura inter scuta brachialia dupla quam inter pectoralia longiore, scutello praefrontali duplici; rhinotheca distincte denticulata; pedibus anterioribus antice scutis latis rotundatis imbricatis 5 series longitudinales et 6 transversales finctis, tectis; longitudine horum scutorum distincte quam latitudine eorum minore, tubere magno corneo subconico in femoris parte posteriore; unguibus brevibus obtusissimis, longitudine longissimi unguis oculi diametrum longitudinalem aequante, vel paulo superante, latitudine unguium vix 11 in eorum longitudine; cauda tenui, longa, longitudine ejus longitudinis capitis majore, scutellis caudalibus dilatatis deplanatis quadrangularibus vel pentagonalibus, 6-8 circum caudam dispositis; carapace lateribus flavescente, macula nigra in scutorum costalium tuberibus ornata; margine anteriore carapacis, scutis vertebralibus nigricantibus, scutis marginolateralibus nigro-marginatis, plastrone flavescente nigro-notato; scutis pedum anteriorum flavescentibus, anguste nigro-marginatis, unguibus palmarum flavescentibus plantarum nigricantibus.

Longitudo carapacis 254 mm. Habitat in montibus provinciae Birdschan in Persia orientali."

### INDEX SLIP.

### ZOOLOGY.

- Annandale, N.—Notes on the Freshwater Fauna of India. No. III.—An Indian Aquatic Cockroach and Beetle Larva, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 4, 1906. pp. 105-107.
- Epilampra, sp. (larva), habits of. N. Annandale, Calcutta Journ. and Proc., As. Soc Beng., Vol. II, No. 4, 1906, p. 105.
- Luciola, sp. (larva), habits of. N. Anuandale, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 4, 1906, p. 107.
- Annandale, N.—Notes on the Freshwater Fauna of India. No. IV.—Hydra orientalis and its bionomical relations with other Invertebrates. Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 4, 1906, pp. 109-116.
- Hydra orientalis, additional specific characters of. N. Annandale, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 4, 1906, p. 109.
- Vorticella monilata, occurrence of in India. N. Annandale, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 4, p. 110.
- Paludina, habits of Indian. N. Annandale, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 4, 1906, pp. 110-111.
- Opercularia nutuus, seasonal occurrence of. N. Annandale, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 4, 1906, pp. 111 (Note).
- Ohironomid larva, Indian, habits of. N Annandale, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 4, 1906, p. 112.



### Notice.

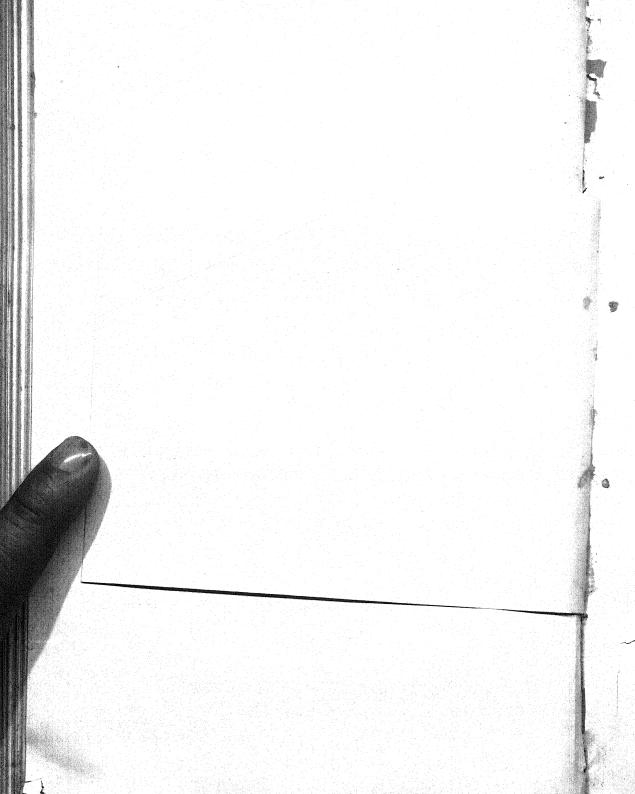
Foreign Societies who favour the Asiatic Society of Bengal with their publications are informed that they may be sent either to the address of the Society at Calcutta, or to the Agents of the Society in London, Mr. Bernard Quaritch, 15 Piccadilly.

### Avis.

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#### ANZEIGE.

Ausländische Gesellschaften welche die Asiatische Gesellschaft von Bengalen mit ihren Publicationen beehren, werden hierdurch ersucht dieselben entweder direkt an die Adresse der Gesellschaft, 57, Park Street, Calcutta, oder an den Agenten in London, Mr. Bernard Quaritch, 15 Piccadilly, zu senden.



## APRIL, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 4th April, 1906, at 9-15 p.m.

E. D. Ross, Esq., Ph.D., in the chair.

The following members were present:-

Dr. N. Annandale, Mr. I. H. Burkill, Babu Monmohan Chakravarti, Mr. B. L. Chaudhuri, Mr. L. L. Fermor, Babu Amulyacharan Ghosh Vidyabhushan, Mr. H. G. Graves, Mr. T. H. Holland, Mr. D. Hooper, Mr. A. H. Lewes, Dr. M. M. Masoom, Lieut.-Col. D. C. Phillott, Rai Bahadur Ram Brahma Sanyal, Pandit Yogesa Chandra S'astree-Sankhyaratna-Vedatirtha, Babu Chandranarain Singh, Pandit Pramatha Nath Tarkabhushan, Pandit Vanamali Vedantatirtha, Pandit Rajendra Nath Vidyabhusan, Mahamahopadhyaya Satis Chandra Vidyabhushan, Mr. E. R. Watson, Rev. A. W. Young.

Visitors:—Mr. G. F. Abbott, Babu Hem Chandra Das-Gupta, Mr. D. W. K. Hamilton.

The minutes of the last meeting were read and confirmed.

Thirteen presentations were announced.

It was announced that the Hon. Mr. Justice F. E. Pargiter, and Major P. R. T. Gurdon, I.A., had expressed a wish to withdraw from the Society.

Rev. A. H. Phillips, proposed by the Rev. A. W. Young, seconded by Mr. D. Hooper; Mr. L. D. Petrocochino, proposed by Mr. J. Macfarlane, seconded by Lieut.-Col. D. C. Phillott; Mr. Evan Mackenzie, proposed by Miss Flora Butcher, seconded by Dr. E. D. Ross; and Mr. M. Krishnamachariar, proposed by Pandit Yogesa Chandra Sastree-Sankhyaratna-Vedatirtha, seconded by Mahamahopadhyaya Satis Chandra Vidyabhushan were ballotted for and elected Ordinary Members.

Dr. E. D. Ross read the following report on the search for Arabic and Persian MSS. for the official year 1905-06:—

# Annual Report of the Search for Arabic and Persian MSS., 1905-6.

In submitting the following report I have to state at the outset, that I have adopted three principles in carrying out the duties of the research work entrusted to me by the A.S.B.:—(1) to take notes of all the important works in Indian libraries both public and private; (2) to purchase valuable MSS.; and (3) to procure transcripts of rare works.

### I. THE RAMPUR LIBRARY.

In connection with the first item, I this year paid a visit to the Rampur Library which is one of the finest libraries in this country and one of which India may well be proud. The collection owes its inception to the learned Nawwab Muhammad Fadul-Lah of Rampur, but the greater part was bought together in the time of the late Nawwab Kalb 'Ali Khan, who was a great patron of learning. He also removed the books from the Toshakhana to the present Library which he had built at a cost of forty thousand rupees. There are in all 8,494 volumes of Arabic and Persian works in manuscript, print or lithograph, of which about

5,000 belong to the first category.

Out of this number upwards of three hundred represent very scarce works; 347 are distinguished for their beautiful penmanship, and no less than forty are authors' autographs. The oldest dated book is than forty are authors' autographs. The oldest dated book is (Kitab-un-Nukat-wal-'Uyun), a commentary on the Qurán. This copy was made in A.H. 557. The author of the book, Abu'l Hasan 'Ali b. Muhammad b. Habíb al Máwardí, died in A.H. 450. Besides, being an old copy, the work itself is rare, no copy being mentioned in any of the catalogues I have consulted. Brockelmann, in his admirable work Geschichte der Arabischen Litteratur, p. 386, gives the names of some nine books written by this author, but he does not mention this particular work. An interesting anecdote about this author's compositions is given in histories. On his deathbed he said to one of his friends:—

"When I am on the point of death, take my hand into yours.
"If I press your hand it will indicate that my works have not met
"with the approval of Almighty God, so you may take them
"out of the place, where they are now secretly hidden, and throw
"them into the river. But if I do not press your hand then take
"it for granted that my productions have been approved by the

"Almighty, and do your best to propagate them."

It so happened that the hand of the 'Allamah remained steady to his last breath and, consequently, his friend did all he could for

the publication of his works.

Another very interesting work—of which no other copy appears to exist—is at-Taisir fi 'Ilm-it-Tafsir by Abu'l Qásim 'Abd-ul-Karim b. Hawázin Al Qushairi, who died in A.H. 465. It is dated A.H. 679.

I give below a list of some of the oldest-dated MSS, belonging to this library.

Book.	- Author.	Date of tran- scription.	REMARK.
(1) Gharib- ul-Lughat.	'Alí b. 'Omar ad Dáraqutni d. 385-995.	а.н. 566.	No copy in Europe.
(2) Amsálus Sá'irah	Abú Ubaid al Qásim b. Salám d. 223-837	а.н. 574.	Common.

xliii

(3) al Maiser.	Abul Hasan 'Alí	A.H.	No copy in
	b. Md. al Bazdaví	590.	Europe.
	d. 400-1009.		
(4) Díwán-ul-Hádirah		A.H.	For other
	al Hádira.	629	copies see
		jali fikur.	Bk. p. 26.
(5) Díwán-ul-Fityán	Abú Muhammad	A.H.	No copy in
	Fityán b. 'Alí	623	Europe.
	b. Jamál-ud-Dín al		•
그리는 상태 교실 회사 등 사람이 없다.	Asadí an Nahví.	មក្រម់ ម៉ែត្រូវបារ	
	d 560, 1164.	ngindan kan ji	
(6) Al Mustau'ab	Abu 'Abd-Ullah	A.H.	No copy in
(0)	Muhammad b.	693.	Europe.
전염병원을 되다고 다 먹었다.	'Abd-Ullah as-	555,	
	The state of the s		<ul> <li>Manager and the second of the s</li></ul>

### II. PURCHASE OF MANUSCRIPTS.

Sámiri al Hanbalí.

The total number of MSS. purchased in the year 1905 was 657. They have been procured from different parts of India such as Delhi, Bombay, Hyderabad, and specially from Lucknow. In addition to this we were fortunate enough to purchase two Collections of MSS., which had been brought to us this year by two Arab travellers. These Collections contain some very rare and old MSS. The majority of the MSS. are in Arabic. Our Persian Collection does not contain more than 105 books. The following classified list will show the number of books under each subject:—

Commentarie Tradition		4			30 88
Law					75
Zaidi Law	•••	•••	•••		20
Sufism			•••	***	7
Ethics	•••		•••		6
Medicine		•••		• • • • •	3
Literature		***	•••		6
History and I	Biography				12
Science		•••			40
Rhetoric					1:
Dictionary			• • •	•••	. 8
Principles of	Jurispruder	ice			2
Science of Co	ntroversy		• • •		୍
Law of Inher					10
Miscellaneous	v				49
Grammar					38

The following facts in connection with this year's collection are worthy of mention:—

(1) Out of the total number of books purchased we have some eighty MSS, which are unique. Many of these being the works of ancient or modern authors which are not even mentioned in European catalogues.

(2) In about one hundred cases the dates range from A.H. 635

to 900.

(3) There are some sixteen autograph copies of the authors such as 'Alí b. 'Abdul Káfi as Subkí, d. A.H. 756, A.D. 1355; Muḥammad b. Usman al Khalílí, c. A.H. 751, A.D. 1350; Abd-ur-Rá'úf al Munáwi, d. A.H. 1031, A.D. 1621.

(4) About half a dozen of our MSS. bear upon them some lines from the pen of such eminent scholars as Yúsuf b. 'Abdur Rahman b. Yusuf al Mizzi, d. A.H. 742, A.D. 1341; Ahmad b. 'Ali 'Asqaláni, d. A.H. 852, A.D. 1448; Ahmad b. Muhammad al Qustaláni, d. A.H. 923, A.D. 1517.

(5) And there are about half a dozen MSS, which bear the original corrections and marginal notes of the authors

themselves.

Among the most interesting additions to our collection are the following:—

(1) Al Katíbat-al-Káminah by Muhammad b. 'Abd-ul-Lah Lisán-ud-Din ibn ul-Khatib, the Spanish vezir, d. A.H. 713, A.D. 1313. It is an unique copy in Maghribi hand and contains the biographical notices of all the Moorish poets of the 8th Century Hijri.

(2) The rough draft of the valuable work entitled Kharidat ul-Qasr by Kátib al Isfaháni, d. A.H. 597, A.D. 1201; dealing with the biographical accounts of the poets of 'Iráq, Shám, Misr, Jazíra and Maghrib who flourished

from A.H. 500 to A.H. 592.

(3) Tuhfat-ul-Ashraf by Yúsuf b. Abdur-Rahman b. Yúsuf al Mizzi, d. A.H. 742, A.D. 1341. This book enumerates all the traditions and sayings of the Prophet related by the Companions of the Prophet; arranged in such a manner that one can easily know at a glance how many traditions have been referred to each traditionist.

(4) An unique autograph copy of al-Ikhtisár wat-Tajríd by Muhammad b. 'Usman b. 'Umar al-Khalíli, dated A.H. 728. It is a digest of the two most important and

authoritative books on Hadis or Tradition.

(5) A rough draft of Maqasid-ul Hasanah by Muhammad b-'Abd-ul-Baqi az-Zarqain dated A.H. 1099, A.D. 1688, a unique work containing the known traditions of the Prophet arranged in alphabetical order.

(6) History of the battle of Siffin by Nasr b. Muzáhim. The author belongs to the Second Century of the Hijra and he is one of the earliest Shi'ah writers. No copy of

this book exists in Europe.

(7) Itháf-uz-Zaman by Muhammad b. 'Ali b. Fazl at-Tabari ash-Sháfa'i. It contains a chronological history of the successive Sharifs of Mecca from the time of the Prophet down to A.H. 1141.

(8) Tadkirat-ul-Fuqahá by Hasan b-Yusuf b-Ali b-al-Muṭahhar al-Ḥilli, d. 726-1326, dealing with Shi'ah Jurisprudence on an extensive scale in three big volumes. This rare work is not found in any European

Library.

(9) The commentary on the well-known Tafsir al-Kashsháf by Mahmúd b-Mas'úd ash Shirázi, d. 710-1310. Although two copies of the work exist, one in Paris and the other in Aya Sofia in Stambul, it is very rare in India.

(10) The Persian translation of the famous Arabic work Khulásat-ul-Wafá by Samhúdi, d. 911–1505, entitled Akhbār-i-Hasínah. It contains a general history and

topography of Madinah.

(11) Rubáb Namah or Magnavi-i-Walad by Sultan Walad (son of Jalál-ud-Din Rúmí, the greatest Sufi Persian poet) d. A.H. 712, A.D. 1312. It is partly in imitation of the Magnavi of Hakím Saná'i (d. 545-1150) and partly of the Magnavi of his father Jalál-ud-Din Rúmi (d. 672-1273). It is in two separate parts. This MS. is in the hand-writing of the author's grandson 'Usmán b-'Abd-ul-Láh b.-Walad, copied in 718 A.H., 1318 A.D., only six years after the death of the author.

(12) A valuable copy of Nafahát-ul-Uns by Jami d. 898–1492, bearing the seals of the Emperors of Delhi and the handwriting and signature of Bairam Khan. Copied in A.H. 902, only four years after the death of the author.

(13) Masálik wa Mamálik by Abul Hasan Sá'id b-'Ali al-Jurjáni, d. 881-1476. A Persian treatise on geography, dated 920 A.H.

### III. TRANSCRIPTS OF RARE MSS.

The last item of business in my programme was to get rare MSS. copied for the Society.

I procured in all ten transcripts, among which may be mentioned the following rare works on Medical Science by Galen.

- (1) Tahrim-ud Dafn, in which the author forbids the burial of a dead body within 24 hours after death.
- (2) Manáfi'-ul-A'dá, on the respective utilities of the limbs of the body.
- (3) Kitáb Uglúqan, a book on diagnosis, written at the request of a Greek philosopher Uglúqan (literally the blue-eyed).
- (4) Kitáb-ul-Agdiyah wal At'imah, on nutrition and food.

It will not be out of place to mention that I commissioned Shams-ul Ulama Maulavi Atawar Rahman, who was proceeding on a pilgrimage to the Hijaz, to keep a lookout for ancient Arabic MSS. in that country. But I regret to say the Maulavi met with no success: for all the books offered to him for sale were well-known works and of recent transcription.

In conclusion I desire to express my high appreciation of the valuable assistance which I have received throughout the year from Moulvi Hidayat Husein, the first travelling Maulavi. Without his enthusiastic zeal, his untiring industry, and his quick intelligence, it would have been impossible for me to submit to the

Council such a satisfactory report.

Rai Ram Brahma Sanyal, Bahadur exhibited a melanoid variety of Sturnopastor contra, Hodg., the common Pied Starling. He remarked that although individuals of the species vary a great deal in shades of colour, a uniformly black specimen is rarely seen. About forty-five years ago Tytler observed a caged specimen of uniform black colour, which he described as Sturnopastor moorii. As far, however, as it is known, Blyth disagreed with him, and considered the bird to be a variety of Sturnopastor contra. It may be interesting to note in this connexion that uniformly white specimens of Pied Starlings, like white or partially white bulbuls and common barbets (Thereiceryx zeylonicus) are not at all uncommon. Sturnopastor contra inhabits the plains of North-Western India including the Nepal and Sikhim Terai, extending eastwards to Assam and Cachar and south to Madras.

The following papers were read:-

1. Gyantse Rock Inscription of Choi-gyal-gnyis-pa, a ruler under the Sakyapa Hierrarch in the 14th century A.D.—By Mahl-Mahopadhyaya Satis Chandra Vidyabhūshan, M.A.

2. Notes on the Freshwater Fauna of India.—By N. Annanpale, D.Sc., C.M.Z.S. No. 3.—An Indian Aquatic Cockroach and Beetle Larva. No. 4.—Hydra orientalis and its relations with other Invertebrates.

3. Notes on "Pachesi" and similar games, as played in the Karwi subdivision.—By E. de M. Humphries.

4. On the Hindu Method of Manufacturing Spirit from rice, and its scientific explanation.—By J. C. RAY. Communicated by Dr. P. C. RAY.

5. Silver dioxide and silver perexynitrate.—By E. R. WATSON, B.A., B.Sc.

6. Persian Proverbs collected from dervishes in the South of Persia.—By LIEUT.-Col. D. C. PHILLOTT, Secretary to the Board of Examiners.

This paper will be published in the Memoirs.

D. O. PHILLOIT, Secretary to the Board of Mixaminers.

# LIBRARY.

The following new books have been added to the Library during March, 1906:—

- Buckland, C.E. Dictionary of Indian Biography. London, 1906. 8°.
- CALCUTTA DIRECTORY AND GUIDE, 1906. Compiled by E. T. McCluskie. Calcutta, 1906. 8°.

Presd. by Mr. E. T. McCluskie.

- Dangerfield, Dr. H. Vivian. Le Béribéré. Définition, étymologie, historique, bactériologie, symptomatologie, pathogénie, pathologie expérimentale, traitement. Deux planches en couleurs, etc. Paris, 1905. 8°.
- DICTIONNAIRE des sciences anthropologiques....Avec...figures dans le texte. Paris, [1889.] 4°.
- Dvivedin, Acala. निर्णयदीपतः [Nirnaya dīpaka...With commentary in Gujrati...by Kriṣṇa Sāstri. Edited by Sada Sankara Hīrāsankara.] [Nadāar, 1897.] 8°.
- Farnell, L. R. The Evolution of religion An anthropological study. London, New York, 1905. 8°.
- Grier, Sydney C., pseud. [i.e., Miss Hilda Greeg]. The Letters of Warren Hastings to his wife. Transcribed in full from the originals in the British Museum. Introduced and annotated by S. C. Grier. London, 1905. 8°.
- Haeckel, Ernst. Wanderbilder. Serie I und II, Die Naturwunder der Tropenwelt.- Insulinde und Ceylon. Gera.-Untermhaus, [1905]. 4°.

Presd. by the Author.

- Haffner, Dr. August. Texte zur arabischen Lexikographie Nach handschriften herausgegeben von Dr. A. Haffner. Leipzig, 1905. 8°.
- Hāji Bābā, ترجية حاجي بابا اسفهاني [Persian Translation of Morier's Hājibaba of Ispahan by Ākā Mirzā Asdulla Khān of Irān.] [ Bombay, 1905.] 8°.

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- Henry, Victor. Le Parsisme. Paris, 1905. 8°.
- Merzbacher, Dr. Gottfried. The Central Tian-Shan Mountains, 1902-1903. London, 1905. 8°.
- Mironow, Nicolaus. Die Dharmaparīkṣā des Amitagati. Ein beitrag zur literatur-und religionsgeschichte des Indischen mittelalters. Inaugural-Dissertation, etc. Leipzig, 1903. 8°.
- Newcombe, A. C. Village, Town, and Jungle life in India... With illustrations. London, 1905. 8°.
- Oldenberg, Hermann. Vedaforschung. Stuttgart, Berlin, [1905.] 8°.
- Rawling, C. G. The Great Plateau, being an account of exploration in Central Tibet, 1903, and of the Gantok expedition. 1904–1905...With illustrations and maps. London, 1905. 8°.
- ROYAL SOCIETY—London. Reports of the Commission...for the investigation of Mediterranean fever, etc. Pt. 4, etc. London, 1906. 8°.

Presd. by the Society.

Schuster, Felix. The Bank of England and the State. A lecture, etc. Manchester, 1906. 8°.

Manchester University Lectures, No. 2.

Presd. by the University.

Wallace, Alfred Russel. My life. A record of events and opinions...With facsimile letters, illustrations and portraits. 2 yols. London, 1905. 8°.

13. An account of the Gurpa Hill in the District of Gaya, the probable site of the Kukkutapādagiri.—By BABU RAKHAL DAS BANERJI. Communicated by Dr. T. BLOCH.

### INTRODUCTORY REMARKS.

Since General Cunningham's unconvincing identification of the Kukkutapāda Hill, mentioned by the Chinese pilgrims as the place where Mahākāśyapa entered Nirvāṇa, with some low hills north of Kurkihār in Gaya District, Dr. Stein in his report on an Archæological tour in South Bihar and Hazaribagh, has located this site on the Sobhnāth Hill, the highest peak in a range of hills further south-west from Kurkihār and about four miles

distant from the village of Wazirgani.1

The following account describes another hill in Gaya district which, for various reasons, seems to agree more closely with the account given by the Chinese of the Kukkutapāda or Gurupādagiri, as it also used to be called. The hill has first been brought to notice by Babu Sreegopal Bose, a Sub-Overseer of the Public Works' Department, in charge of Bodh Gaya, who already noticed the great similarity between the remains on the Gurpa Hill with the description given by the Chinese of the Kukkutapādagiri. He accompanied the author of the following paper on his visit to the hill during the last Christmas holidays.

The points which to my mind make the identification of the Gurpa Hill with Kukkutapādagiri preferable to Dr. Stein's

identification with the Sobhnath Hill, are the following :-

(1) The modern name Gurpā is an exact Prākritic development out of Sanskrit Gurupāda, the second name by which the hill used to be called according to the Chinese.

2) The distance of 19 to 20 miles east of Bodh Gaya agrees better with the 100 li east of the same place, the distance given by Hiuen Thsang, than the distance of 14 miles north-east of Bodh Gaya, as calculated by Dr. Stein for the Sobhnāth Hill. Probably also the corresponding distance from the approximate site of Buddhavana will be found to agree better with the Chinese accounts for Guros than for Sobhnāth

Chinese accounts for Gurpā than for Sobhnāth.

(3) The Gurpā Hill has a large tunnel running through it and forming a passage leading to the top, thus corresponding accurately with the cleft through the hill made by Kāśyapa on his ascent according to the Chinese accounts. No similar feature is recorded for the Sobhnāth Hill by Dr. Stein, who, on page 89, merely observes that "in the confused masses of rocks heaped up all along the crest lines of the three spurs, we can look for the passages which Kāśyapa was supposed to have opened up with his staff.

<sup>1</sup> Ind. Ant., March 1901, p. 88,

(4) The top of the Gurpā Hill has three distinct peaks forming the three cardinal points of a triangle. Hiuen Thsang likewise speaks of three high peaks on the summit of Kukkutapādagiri, between which Kāśyapa sat down when he entered Nirvāṇa. With regard to Sobhnāth, Dr. Stein mentions merely three spurs, extending from one joining point into various directions and thus resembling a cock's foot, from which, according to him, the hill came to be named 'Cock's foot Hill' (Skt. Kukkutapādagiri).

The Gurpā Hill has, on its peaks, remains of old brick buildings, which may have belonged to the Stupa on the top of Kukkuṭapādagiri, mentioned by Hiuen Thsang.

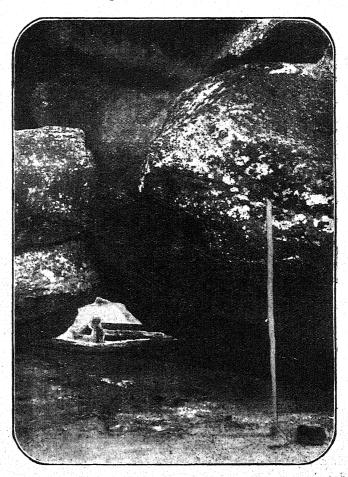
That the Gurpa Hill still forms an object of local worship

is also a point which cannot be overlooked.

From all the above arguments, I think the proposed identification of Gurpā with the Kukkutapāda or Kurupādagiri of the Chinese has much that speaks in its favour. I only regret that the paper impressions of the two short inscriptions referred to below were too indistinct to enable me to add a complete reading of the inscriptions.

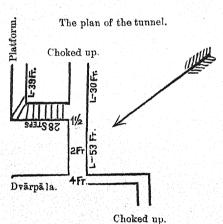
T. BLOCH.

Gurpa is the name of a hill near the station of the same name at the 25th mile on the new Railway from Katrasgarh to Gaya. Directly, it is about 19-20 miles from Bodh Gaya. The village folk call the hill Gurpa. They say that the deity of the hill, Gurpā-sinmāī, suffers nobody to climb on it with shoes, and whoever does so is sure to slip his foothold. The sides of the hill are



very steep and composed of polished slippery boulders large and small, which justify the statement. There is only a single path leading to the top on the north side of the hill, all other portions; being unclimbable. The plain surrounding the hill is thickly wooded. From the station to the foot of the hill is about one mile, and we had to cross the dried-up bed of a hill stream on

The hill is a curved chain running S.W. to N.E. The south-western portion ends in a small peak. In the middle of the chain there is a sharp rising of about 300 ft. which divides itself at the top into three sharp peaks; after this, at a distance of about 500 ft., it ends abruptly. This is the highest peak in the neighbourhood, higher than the Brahmayoni, the height being slightly short of 1,000 ft. Along the track to the summit the trees grow smaller, and along the highest peak the vegetation shrinks to short reeds and sharply-pointed grass. There is a sort of wood-land track up to the back of the hill, i.e., up to the base of the highest peak, going across the hill to the southwestern or other side and ultimately losing itself in a rough upward incline at the base of the highest peak. Here is a small Ahir shrine consisting of six small mounds of earth well plastered over with cowdung and marked with vermilion, which is known as Dvārapāla, the gate-keeper of Gurpasinmāi. Here, concealed among the shrubbery, appears the mouth of a tunnel or cave 4 ft. wide and 6 ft. in height. At a small distance from the entrance, it branches into two parts, one south-westernly going downwards and choked with large bricks, stones and rubbish, and the other



2 ft. in width in the entrance going upwards, gradually narrowing until at the 53rdft. from junction, it becomes impassable, being merely a fissure in the rock with sharp rocks interlacing across the fissure. Here another passage opens towards N.E. Turning to this gallery one stumbles as it is extremely dark, upon a staircase of stone of 28 steps at the end of which the pas-

sage turns sharply almost at right angles towards the east and ends on a platform formed by a large boulder. At the extremity of this platform is another Ahir shrine. The object of worship is a small pool of rain-water formed in a natural depression in the rock, around which are placed three small boulders of about a man's height. Here the track becomes sheer impossibility. The path is along boulders of stone polished to the smoothness of marble by the action of rain-water up an incline of 60° with no hold for assistance, for at this height vegetation consists of sharp, thorny grass and thin reeds. After a climb of more than 50 ft., another platform is reached. Here, another tunnel is reached running north to south across the whole width of the mountain, a length

Vol. II, No. 4.] An account of the Gurpa Hill.
[N.S.]

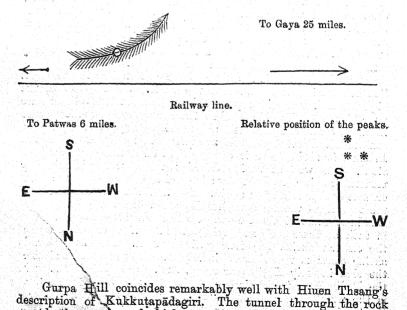
of about 30 ft. The tunnel is formed of huge pieces of stone leaning on one another, thus forming a sort of archway 4 ft. in height at the entrance, gradually widening in circumference—the height at the end of the cave or tunnel being nearly 30 ft. The tunnel ends in a steep precipice about 500 ft. high. At the edge of the tunnel there is a rectangular tank with a single step running along its four sides (8'×5'). The tank is dry and there is no possibility of its ever being filled with rain-water.

I heard a curious story about this tank from a guard of the East Indian Railway, Babu Dayāl Ch. Gupta. He told me that the tank was covered with a huge piece of stone which was raised by order and in the presence of Mr. F. E. Cockshott, the Engineer-in-charge of the new line, and inside was found a skeleton more than 6 ft. in length. Where the skeleton and the covering stone is now I could not ascertain. Was this a Sarcophagus? On a small boulder along one of the walls of the cave are some Buddhist sculptures, a headless statue of Buddha about 8' in height, another of a crowned Buddha in the Bhumisparsa Mudrā, 1'-4" in height and a votive stupa with panels containing a Buddha on each of its four faces about 2 ft. in height, all uninscribed. The track to the top continues from the platfrom at the entrance of the tunnel or cave mentioned above along the walls of the cave. Here steps are cut in the stone of the width of about ten to eleven inches. From this platform further climbing with boots and shoes on became an impossibility. Many of these steps are almost effaced with age, being mere notches less than an inch wide scarcely affording a foothold, while some are perfect. The last part of this curious stairway which leads to the top of the highest of the three pinnacles winds itself half around it. From the platform the three peaks are distinctly seen, their pinnacles would form a right-angled triangle.

The N.E. peak is the highest, the Western in the next, the Southern being the lowest of the three. On the top of the highest peak there is a piece of level ground about 20 ft. square on which there lie, side by side, two shrines each five feet square in dimension. The shrines are made of huge ancient bricks, sculpture and statuary loosely piled without any mortar or cement. In each is shrined a pair of footprints on dark square pieces of The western shrine contains a slab which is evidently modern judging from the clumsiness of the sculpture of the floral ornamentation around the footprint and the unnaturalness of the footprints themselves. Besides these there are numbers of Buddhas, some of them crowned and Buddhist Taras enshrined in each of these shrines. Lying on each of the four corners of the eastern shrine are four votive stupas. The slab in this shrine contains two lines of inscriptions along the two sides of the slab in early Kuțila characters, such as those which occur in the Bodh Gaya inscriptions of Mahanaman. One of these lines is the usual Baddhist sloka "Ye Dharmā hetu prabhavā," etc.the "hetu prabhava" is quite distinct in my impression. The other line most probably contains a dedicatory inscription as along the middle of it I can read in my impression "tad bhavatu satvānām mātāpitroh, etc." On the walls of the western shrine I noticed a chaitya panel inscribed below with a Deva-Dharma and ye Dharma hetu, etc. The one other inscription is by far the most important of the whole lot. It is incised on the back of a door lintel or jamb. On this side the jaggedness of the chisel marks has not been removed by polishing. The initial letter is most probably gu; then follows several letters which I cannot make out. Then a gap of about 3 or 4 inches after which follows a na inverted and after that another letter also inverted. but which has been cut away by an incision in the stone probably for the iron clamp which secured this piece to other portions of the door or window.

On the western peak there is another square basement of large bricks, probably the base of a stupa. At present the peak is difficult of access. On the southern peak there is a large pile of fragments of sculptures, bases of stone stupas, votive stupas, portions of statuary, etc. Traces of blood stains were found at the door of the two temples on the north-western peak, and, on enquiry, I learnt that the villagers offer animal sacrifices at all the shrines. The best view of the three peaks is obtained from the platform where the Ahirs worship a natural hollow in the rock described above. It is evident from the above description that the remains at Gurpa are of Buddhistic origin.

Position of the hill.



must be the very tunnel which, according to Hiuen Thsang, Kasyapa

opened for himself. "Ascending the north side of the mountain he proceeded along the winding path and came to the south-west ridge. Here the crags and precipices prevented him from further advance. Forcing his way through the tangled brushwood he struck the rock with staff and thus opened a way." This is the first tunnel in the accompanying plan which branches at a short distance from the entrance and goes downwards. "He then passed on having divided the rock and ascended till he was again stopped by the rocks interlacing one another. He again opened a passage through, and came out on the mountain-peak on the north-east side." One of these is the tunnel leading to the stairway and the other is the tunnel which contains the stairway described above. We learn from Fa Hian that the entire body of Kāśyapa was preserved in a side chasm on the hill. Perhaps the skeleton found in the cave is the skeleton of the venerable Kāśyapa. Fa Hian also says that outside the chasm is the place where Kāśyapa when alive washed his hands. This is the natural hollow in the rock described above as an Ahir shrine. It is interesting to note that the place is still an object of local worship. Both Hiuen Thsang and Fa Hian agree to the fact that the approach to the hill lay through a dense forest inhabited by wild beasts. This is still so. The whole of the plain is covered with dense forest. On our way from the Railway to the base of the hill we found marks of enormous paws on the sandy ground. According to our guide, a local man, the forest is inhabited by large numbers of bears and tigers, some of whom are white. Probably these white tigers are described by Hiuen Thsang as Lions, since lions in these parts of the country are scarce. According to Hiuen Thsang Kāśyapa, after emerging from the tunnel, proceeded to the middle point of the three hills and there he still lies awaiting the coming of Maitreya Bodhisattva. The second tunnel described above is formed of huge boulders of stone leaning against each other. A further point of coincidence is this. Hiuen Thsang says: "On quiet evenings those looking from a distance see sometimes a bright light as it were of a torch, but if they ascend the mountain there is nothing to be observed." I heard from Dayal Babu that on dark nights lights are visible on the top of the mountain. The villagers attribute the presence of these lights to jewels which they say are on the mountain-top. Some Europeans organised a search party, but on reaching the top they of course found nothing. This also is a curious survival of the tradition which has been recorded by the Chinese master of law thirteen centuries ago. The gentleman from whom I received these pieces of information know very little either of the Chinese pilgrims or of the venerable Mahā Kāśyapa. The mountain-side is covered with caverns which justifies Hiuen Thsang's epithet "Cavernous." It is imposible to photograph the three peaks, because the place whence the only distinct view is obtainable is too small for working a camera.

14. Some Persian Riddles collected from dervishes in the south of Persia.—By LIEUT.-COLONEL D. C. PHILLOTT, 23rd Cavalry, F.F., Secretary to the Board of Examiners, Calcutta.

 A strange thing I saw in this world: Water bubbling round fire.

Answer: Samāvār.

2. A strange thing I saw in this world: It roared and wailed and circled round.

Answer: Mill.

- 3. What is that which travels without feet, head or hands?

  Answers: Water,
  Wind, a Worm.
- 4. What is that which hides men in its belly?

  Answer: The Earth,
- 5. What is that which encompasses the world in a moment?

  Answer: The wind.
- 6. What is that which from head to foot is all tongue? Answer: Fire.
- 7. What is that which no woman will eat?

  If a man eat it he grows strong.

  Good is it and impalpable, but in eating it

  Neither hand, nor lip, nor mouth is used.

  Answer: Knowledge.
- 8. White art thou as snow; black am I as a Negro:
  My head is split: thou art below and I am above.
  You do not move: though I do move.

Answer: Pen and Paper.

9. What is that travelling ship, double-doored, Lion-armed and dragon-shaped?

Another sight I saw in it:
It made the dead alive.

Answer: Tortoise.

چند معمّای فارسي که جناب معلی القاب کونل دی - سیفلات صاحب متعلق به قشون سوارهٔ نمبر ۲۳ سرحدی
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اقامتهان در کرمان و بلوک جنوبیهٔ ایران از دراویش
و نیره جمع آوری نمودهاند ذیلاً نگارش میرود

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    - 5 کن چیست که یک لحظه بگرده همه عالم ؟ حُلّ = باه
    - 6 كن چيست كه سوتابقدم جمله زبان است ؟ حلّ = كتش
      - 7 آن چیست که هرگز نخورد اورا زن کر مرد! خورد قوی شـود او را تن کر مرد! خورد قوی شـود او را تن کر خورد آن کر خورد آن کی در خوردن آن که دست بکار آید و نه لب نه دهن
  - 8 تو سفید همچو برفی من سیه همچو زنگم سوم هم شگاف دارد تو بزیر و من به بالا کمک سے قلم و کافذ تو نجنب که من بجنبم
- 9 چیست آن کشتی روان دو در, شیر بازو و اژدها پیکر؟ کی کاسه پشت صنعت دیگری درو دیدم; مرده را زنده میکند بنظر

10. A headless crane I saw: nor barley does it eat nor wheat;

Water it drinks from the river and it benefits all mankind.

Answer: Pen (reed).

11. What is that strange creature with two heads? Six holes has it in its body:
Weigh it and its weight is six misqāl;¹
On its back it carries a hundred mann.\*

Answer: Horse-shoe.

- 12. A strange creature I saw that had six legs and two heads:
  Stranger still, listen to me, was this; its tail was in its back.
  Answer: Scales.
- 13. A strange thing I saw in this world
  That had a hundred nails in its feet and hands.
  Five bodies, five heads and four lives
  Read me this riddle, oh wise man.

Answer: Bier (with the corpse borne by four men).

14 What is that which is light as a fairy?

It flies without wings; it emits sound though void of mouth.

Answer: Paper-kite.

15. What is that which is round and rolling Its whole without life: its halves alive? Ass is he that guesses not this And less than a goat is that ass.

Answer: Melon (Khar-buz).

16. A man from Africa came to me; A strange weird creature he had with him; The animal by God's creating Had eighty heads and ten bellies and thirty legs. Answer: Elephant (Fil).3

17. The head of (the word) mullā on the neck of mullā.

This riddle is made in the name of God.

Answer: The word Majid 4 "Glorious."

[The head of  $mull\bar{a}$  is the letter  $m\bar{\imath}m$ , and the Arabic for neck' is jid: together these make  $Maj\bar{\imath}d$ .]

<sup>1</sup> One misqāl is =  $\frac{1}{16}$  oz. and 90 misqāl = 14 oz.

<sup>&</sup>lt;sup>2</sup> The Tabriz mann is about 7 lbs.

<sup>8</sup> By abjad: 3 = 80 and 3 = 10 and 3 = 30.

One of the ninety-nine attributes of God and also a proper name.

10 بی سرکلنگ دیدم نی جو خورد نه گندم } حُلّ = قلم کی خورد ز دریا فیضش رسد بمودم

- 11 چیست آن صنعتی دوسر دارد ; شش تا سو راخ دربدن دارد؟ } حل اسپ بخشی وزن او چهل مثقال بار صد من به پشت بردارد }
  - 12 عجائب خلقتی دیدم که شش پا و دوسردارد کی ترازو عجائب قرازین بشنو میان پشت دم دارد کی در این بشنو میان پشت در این بشنو در ای
  - 13 مجانب خلقتی دیدم در این دشت که صد ناخن برود بر پا و بر دست که صد ناخن برود بر پا و بر دست تنش پنج و سرش پنج و نفسس چار کمل حوابی دلا به سن ای مرد هشیار
  - 14 آن چیست که مانند پري ناز کند  $\left\{ \begin{array}{cccc} 14 & & \\ -2 & & \\ \end{array} \right.$  کاغذ هوا بی پر پرد و بی دهـــن آواز کند  $\left\{ \begin{array}{cccc} -2 & & \\ -2 & & \\ \end{array} \right.$ 
    - - 16 شخصی ز حبش رو بسوی ما داشت کی جانور بوالعجبی همرا داشت کی جانور از صنع خداوند کریــم کشتاد سر و دلا شکم و سی پا داشت
    - 17 سر مسلّه بگردن مسلّه کی اسر مجدد کی استان مجدد این معمداً کی اسم مجدد

18. It travels to the sky ahead of the eye But no one has ever seen it.

Answer: Sight.

This wool-dressed and well-stuffed Sūfi
Has one penis and two hundred testicles.

Answer: The Kathal 1 or Jack-fruit.

20. In the depths of this sea there dwells a shark That holds in its mouth a single pearl; Strange that though it has no belly It drinks the sea to the last drop.

Answer: The Wick of a Chirāgh.

A bird I saw without legs or wings;
Born neither from womb of mother nor loin of father:
Neither in the sky nor 'neath the earth it lives,
Yet it ever eats the flesh of man.

Answer: Anxiety.

22. What is that fairy-shape that has no life? It laughs yet has no mouth:
It weeps yet has no eyes
It travels much yet has no feet.

Answer: Cloud.

23. What is that which has no bones;
In its body it has neither breath nor life?
When hungry it is at rest
When full it complains.

Answer: Mill-stone.

24. A strange thing I saw in this world; Inanimate it followed the animate.

Answer: Threshing-machine.

25. Two bodies in two Caravans I saw
Their heads bared, their bodies blistered;
The Caravans do not move without permission of those two
Nor do those two move without permission of the Caravan.

Answer: Dice at
Backgammon.

20 نهنگ ی هست اندر قع ر دریا گرفت در دهان یک داند ه گوهر عجب آنست که اورا څود شکم نیست ولیکن میخورد دریا سواسر کا اولیکن میخورد دریا سواسر نف از رحم مادر نه پشت پدر نف از رحم مادر نه پشت پدر نفه بر آسمان و نه زیر زمیدن نفه بر آسمان و نه زیر زمیدن همیشه خورد گوشت آدمی که جانش نیست کی لعبتی که جانش نیست کی خیده میکند د دهانش نیست گرید ها میکند د دهارد چشم

28 این چیست که استخصوان نداره کدر پوست نقصی و جسان نداره کمل و جسان نداره چون گشده شود ملول  $^{1}$  گرده چون گشده شود فغسان بر آرد

24 عجائب صدعتے دیدم: درین دشت کے مل سے برچین کہ بے جان در پئے جان دار می گشت

25 دیدم دو تن فناده میسان دو قافله کس سرها برهنده کرده و ننها گیر آبله کمل سے کعبتین نه قافله روان شده بي اذن آن دو نن نه آن دو تن روان شده بي اذن قافله

<sup>1</sup> Malūl = Ārām.

26. What is that which has no bones; If it fastens on you it does no harm.

Answer: A Leech.

27. A warbler of this garden am I, and this garden is my flower ground
I'm a fire-eating bird, am I, and fire is my plumage;
My bones are silver and in my belly I carry gold;
He that guesses this is wiser than I.

Answer: Egg.

answer . mgg.

<sup>2</sup> As it surrounds it when cooking

<sup>1</sup> Atash-khwār is also a name for the pheasant.

Some Persian Riddles.

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27 بلبل این باغم و این باغ گلُذار من است مرخ آتش خوارم و آتش پر و بال من است استخصوانم نُقرة و اندر شكم دارم طلا هر كس معني بداند باز آستاد من است

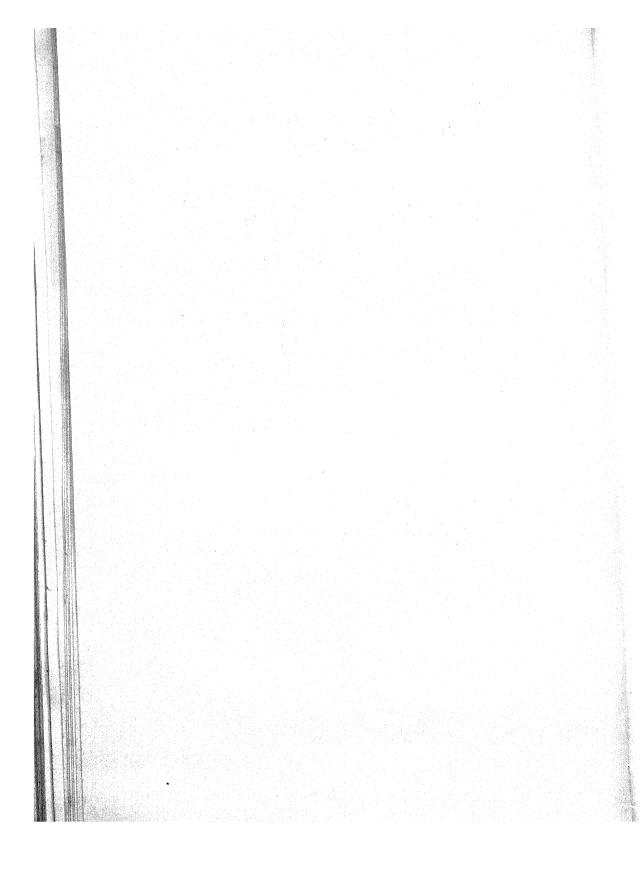
28 سرش لُولھ مزو 2 بیخش لولھ خزو 3 حلّ = پستان زن ما ھو، خوردیم ازو

29 آن چیست کاسکہ غضنفر فرٹ کی چشسم دارد یکے بگلگ سر چشسم دارد یکے بگلگ سر چون شود گشنسته می شود فرده چون شود سیسر می شود لاغر

<sup>2</sup> From mazīdan " to taste."

From hazzaan "to slide, be slippery."

Ghazafar "lion": farr "magnificence."



 Gyantse Rock Inscription of Ohos-rgyal-gñis-pa, a ruler under the Sakyapa Hierarch in the fourteenth century A.D.—Ву Манаманораднуйуа Satis Chandra Vidyaвнūşaņa, М.А.

This is a bas-relief in a heavy piece of grey slate 2 feet  $3\frac{1}{2}$  inches long, 1 foot  $1\frac{1}{2}$  inches broad, and 1 inch thick. It was brought from Gyantse Jong during the late Tibet expedition and is now deposited in the Indian Museum at Calcutta. The inscription is in a perfect state of preservation but a few letters on the corners at the top and bottom of the slate have been broken away and lost. It consists of 23 uneven lines which, if properly arranged, would make up eight verses of four feet each. As each foot consists of 9 syllables, there are altogether 288 syllables or words in the inscriptions. It is written in the Tibetan language and characters, but there are two benedictory phrases in Sanskrit

at the beginning and end of the inscription.

The first  $5\frac{1}{2}$  lines describe Upper Nyang, of which Gyantse is the capital, as a splendid dominion where all wishes are accomplished at once, and in which the ten perfect virtues always prevail. The next  $9\frac{1}{2}$  lines refer to the repair and new construction of various Tantrik images such as those of Guru Padmasambhava, Trinity of Father and Sons, the Three-fold Body of Buddha, etc., which were undertaken and accomplished by a ruler of Gyantse with the object of securing longevity for his wife the queen, for the increase of prosperity of his people, and for the propagation of the Blessed Doctrine. This ruler is named Chos-rgyal-gñis-pa, who is described as a virtuous man, a skilful disputant, a miraculous manifestation of Vajrapāņi, and victorious over all quarters. The remaining eight lines contain the prayers of the man who raised the inscription. It is very probable that Chos-rgyal-gnis-pa (literally: religious king the second) is identical with Chos-rgyalrab-brtan (literally: religious king the firm) who, as a regent under the Sakyapa Hierarch, ruled over Gyantse and founded the fort and monastery there in the fourteenth century A.D. There are evidences that the inscription belonged to the Sakyapa sect, and was prepared at a time when the Dalai Lamaic Government had not yet been established.

## Translation.

#### BLISS,

A splendid dominion, productive of the ten perfect virtues, in which the extent of the earth is washed by the light of love

¹ Ten virtues called in Tibetan Ge-cu (১৯°মেই) and in Sanskrit Daśa-kuśala (ইম্বুম্ব) are:—

<sup>(</sup>i) अॅक अ करें प, प्राचातिपात विरति, not to kill anything living.

and kindness, which brings about the highest blessing of emancipation from rotatory existence, in which religious kings, who are miraculous manifestations of Jina, rule in succession, and where success (the ultimate object) is attained from fortune of the merit of good work—this dominion of Upper Nyang (Nan), where all wishes are accomplished together, has Gyantse (Rgyal-nkhar-rtse-mo) for its capital.

- (ii) মাটুনাথান ঐত্যাব, অহনাবাৰ বিছবি, not to take what has not been given.
- (iii) र्थेन'यूर'अ'मधेम'य, काम मिळाचार विरति, not to fornicate.
- (iv) ह्रुक'अ'श्व'य, स्वावाद विर्ति, not to tell a lie.
- (v) हैं न'स्य' भे' श्व'य, पर्षवाग् विर्ति, not to use harsh language.
- (vi) দেণ্ট্র'ম্'স্ক্'ম্, समित्रप्रवाप विर्ति, not to talk foolishness.
- (vii) खु'क्ष'क्ष'हें, पेश्वन्य विश्ति, not to calumniate.
- (viii) युक्य रोग्न अभिष्या विर्ति, not to be avaricious.
- (ix) শুর্বিং নাম প' মা ' শুর্বিং বিহ্বি, not to think upon doing harm.
- (x) প্রাণ্ড ম ট্রাং, নিআহেছি বিহলি, not to entertain heretic notions. Cf. Mahāvyutpatti, section 87, and Dharmasamgraha. section lvi.
- 1 BUN'US (love and kindness) may also signify 'Maitreya, the coming Buddha.' There is actually such a Buddha in Gyantse. Percival Landon writes:—"Inside the central crimson-pillared hall (of the monastery at Gyantse) the only conspicuous object is the great seated figure of Maitreya, the next Buddha to be re-incarnated (Lhasa, Vol. I., p. 210).
- 2 अदिन सह signifies "re-birth," while दूर श्रे निर्ण means "summum bonum." The whole means: "the highest good caused by deliverance from re-births." That rotatory existence and emancipation from it are inseparable, is the chief doctrine of the Sakyapa Sect as explained in Gser-chos-bong-sum. See Sarat Chandra Das's article on Tibet, J.A.S.B., 1882, p. 127.

  3 Religious Kings who are miraculous manifestations of Jina, called in

Tibetan อูญ"บุริสารฐญาชัง อูญ, are Srong-tsan-gam-po, born A.D. 627,

Kri-srong-de-tsan, born A.D. 728, Khri-ral or Ral-pa-chen, born A.D. 864, etc. The Lamas of the Sakyapa Sect who, under authority from Kublai Khan, ruled over Tibet, 1270-1340 A.D., are perhaps referred to here.

- 4 The Province of Nyang is divided into two parts: (1) ዓር ፳፫, Upper Nyang, and (2) ዓር ሟጚ, Lower Nyang. The capital of the former is Gyantse while that of the latter is Shigatse.
- 5 Gyantse is a small town on the right bank of the Pena Nyang Chu river It is situated about two small hills which lie east and west and are united by a saddle. On the eastern hill is a large fort (Jong) and on the western hill a Gompa in which there is a chorten called Pangon chorten. See Export on the Explorations in Great Tibet, by A. K., p. 31.

Vol. II, No. 4.] Gyantse Rock Inscription.  $\lceil N.S. \rceil$ 

Here there are heaped up light blue images beautiful like the turkois basins. It is explained on a margin of the Register (Kar-chag) that old ones were repaired and (the new ones that were) erected (are those of) Guru (Padmasambhava) in eight forms, 2 Dag-mar (Lohita Kudra), Dharma-sambhoga-nirmāna kāyas,3 etc., consecrated4 Lamas who combat against avidyā (Cosmic Blindness) being born in the line of Mañjughosa, b practitioners of charms, who are the essence of the Omniscient-

(i) Guru-padma-hbyun-guas, "Born of a Lotus" for the happiness of

(ii) Guru Padmasambhava, "Saviour by the religious doctrine."
(iii) Guru Padma Gyalpo, "The king of the three collections of scriptures (Tripitaka).

tures (Tripitaka).

(iv) Guru-rdo-rje gro-lod, "The Diamond comforter of all."

(v) Guru ñi-ma hod-zer, "The enlightening sun of darkness."

(vi) Guru-Sakya Senge, "The second Sākyasimha."

(vii) Guru-Banya Benge, Ine Second Sakyasınına.
(vii) Guru Senge, sgra-sgrogs, "The Propagator of religion in the six worlds with the roaring lion's voice."
(viii) Gurublo-ldan-mchog-sred, "The conveyor of knowledge to all."

Cf. Waddell's Lamaism, p. 379.

३ केंग अ, धनीवाय, "The body of law or the absolute body" is Buddha in the Nirvna. अद्रश्य अ, सम्भोगकाय, "the body of happiness or glory" is Buddha in the perfection of a conscious and active life of bliss in heaven. अूप् अ, निकासकाय, "the body of transformation and incarnation" is Buddha as man on earth (Vide Jäschke, under 3).

4 The reading is obscure. ਨ੍ਸਨਾਸ਼ਡੂਨ probably is the same as অনিষিম consecrated. If the reading is ব্যুত্ব বুঠু it would mean "of eight powers."

l Here some of the letters have been broken away. ইন্সাম means 'white stone.' If the reading is TAI, which seems probable, the meaning would be: 'light blue.' So the meaning is either 'light blue mages 'or 'images of white stones.'

<sup>&</sup>lt;sup>2</sup> Padma-sambhava generally called Pad-yung or Guru was the founder of Lamaism in Tibet. He has been deified and receives now more worship than Buddha himself. He was a native of Udyana, a follower of the Yogacarya School, and a student of the College at Nalanda. At the invitation of King Khrisrong-de-tsan he visited Tibet in A.D. 747 and founded the monastery of Sam-ye, which is the first Tibetan monastery, in A.D. 749. His eight forms are thus enumerated:-

<sup>5</sup> Mañjughoṣa (ロFみて見ない) is the god of wisdom whose chief function is the dispelling of ignorance or cosmic blindness. "Born in the line of Manjughosa" signifies " very learned," and refers specially to the Lamas of the Sakyapa sect.

merciful one, the Trinity of Father and Sons, Ganapati and

Gon-shal 2-altogether twenty-seven in number.

Chos-rgyal-gñis-pa<sup>3</sup> (religious king the second) was virtue accumulated, a miraculous manifestation of Vajrapani,4 an uprooter of bad controversialists and victorious over all quarters. He, with his son in conference, for the longevity of her majesty the queen, for the increase of happiness and wealth of the people and for the propagation of the blessed doctrine, erected these images. Whatever power these have of doing good deeds by the same may the discordant conditions in all directions become quiet, may the strife among the eight classes of devils and the frontier war be appeased, may the imprecation 5 and magic circle be averted, and may good fortune be given to us.

Here we have made these designs. For other sentient beings living to the end of the sky, may the two aggregates, viz., virtue

3 Chos-rgyal-gnis-pa (religious king the second) refers probably to Chosrgyal-rab-brtan who built the fort (Jong) and the monastery of Pal-khar-choi-de

4 Vajrapāņi, a tutelary deity, generally invoked by the followers of the

Sākyapa sect.

<sup>1</sup> Trinity of Father and Sons (এম্'র্ম' স্থ্রা) means "Father and two Sons," that is, "Master and two Disciples." It probably refers to Khondkon-mchog-rgyal-po who founded the Sakyapa sect and to Je-kun-gah-dolchog and Kun-gah-zan-po who were the founders of the two sub-sects, viz., nor-pa and Jonan-pa of the Sakyapa School.

<sup>2</sup> अञ्जः दा, नाघ, or Lord, is a class of demon-generals of the fiercest type numbering seventy-five. অপ্রতির (perhaps same as অপ্রত্য বিষয় "Lord-face" is, according to Waddell, a demoniacal guardian of the Sākyapa sect (Vide Lamaism, p. 70). Here अवन and QQ may be taken separately, so that the sentence may be interpreted thus:-".....Ganapati and Naths (mgon)-altogether twenty-seven individuals (shal, faces or individuals) in number."

at Gyantse. Rai Sarat Chandra Das Bahadur, C.I.E., writes:—
"It (the Jong of Gyantse) is very strong, and was built by the famous Chos-rgyal-rab-brtan who ruled in the fourteenth century over the Province of Nyang, of which Gyantse was the capital. This province was a part of the domain of the Sakya hierarchs."... "He (a well-informed Nyingma lama) told him (Ugyen), furthermore, that there existed two printed volumes about Choigyal rabtan (Chos-rgyal-rab brtan), the famous king who had founded the Palkhor choide of Gyantse, but that these works and the history of Gyantse were now kept as sealed works (terchoi) by the Lhasa Government." . . "On the first floor (of the chorten in the Palkhor choide) we were shown the statue of Choigyal rabtan (Chos-rgyal-rab-brtan), under whose benign rule Gyantse became famous, and who gave a fresh impulse to Buddhism and literature. The Kunyer of the chorten touched our heads with the sword of this illustrious monarch, and said that by his blessing (jin-lah) we could triumph over our enemies and enjoy longevity and prosperity in this world."—(Sarat Babu's Journey to Lhasa and Central Tibet, edited by Rockhill, pp. 87, 88, 89.)

<sup>5</sup> Imprecation ( A) - This is a kind of imprecation which consists in hiding the name and image of an enemy in the ground underneath an idol, and imploring the deity to kill him.

and wisdom be accomplished and the two defilements quickly clear out. For the quietude of the unstable world may the three persons (Dharma-sambhoga-nirmāṇa kāyas) collectively come. By the blessing of the three may the approved infallible truths prevail. May the king with brother, sister, mother and son live a long life and may the kingdom go on smoothly. May there be happiness and prosperity as in the golden age.2

All auspicious.

#### Transliteration. .

Sva-sti || Phun-tshogs dge-beu bskrun-pahi mnah mdans las I Byams-brtshhi hod-kyis hdsin-mahi khyon byab-pa | Mion-mtho neg-legg dpal-la gbyor-mdsad-pahi | Royalwahi mam-hphrul chos-rgyal rim-byon rgyal | Legs-byas bsodnams dpal-las grub-pahi yul Hdod-dgu lhun-grub Nan-stod righbyun-wa. Chos-rgyal pho-bran Rgyal-mkhar-rtse-mo-yi | Gyugshon-ltar mdseg rdo = dkar debs bahugs rten # Shar-bshugs dkarchag-zur gsal shig-bsos dan Yar-bshens Gu-ru mtshan-brgyad Drag-dmar dan | Chos-long-sprul-sogs dwan-brgyud bla-ma dan | Ma-rig-la hkhon hjam-d wyang-rigg-hkhrung-pahi | Mkhyen-brtsehi bdag-ñid snags-hchan yab-sras gsum I Tshogs-bdag Mgon-bcas shal grang ni-su-bdun I Chos-rgyal gnis-pa bsod-nams lhun-grub dan Gsan-bdag rnam-hphrul rgol nan unthar-byed-pa | Phyogslas rnam-rgyal sras-beas bkah-bgros-nas I Lha-geig rgyal-mo skutshe brtan-phyir dan I Mnah-hbans bde-skyid dpal-hbyor-rgyas byed dan n Bstan-pahi mig-rkyen dge-wa rgyas-slad bshens n Hdis mtshon rnam-dkar mdsad-pa ji-sned mthus || Gnas-skabs mi-mthun phyogs-rnams shi-wa dan || Sde-brgyad hkhrug dan mthadmag zlog-pa dan II Gtad-khram hphrul-hkhon shi-wahi dge-legs stsol II Hdi-yi phyogs-su bkod-pa-las byas dan II Gshan yan nammkhahi mthar thug sems-can-rnams | Tshogs-gñis rab-rdsogs sgribgñis myur byan-nas I Srid shir mi-gnas sku-gsum lhun-grub śog I Brtag-bden mi-slu-rnam gsum-byin-rlabs-kyis Mi-dwan skumched yum dan sras bcas-kyi | Sku-tshe brtan-shin chab-srid hjam don nos | Rdsogs-ldan bshin-du bde-rgyas bkra-śis śog | Sarvamanga-lam

# अ। सन्धे। सन्धेन सन्देन्नामान्नामान्यः मन्नामान्यः मन्यान्यः मन्यान्यः मन्यान्यः मन्यान्यः मन्यान्यः मन्यान्यः मन्यान्यः मन्यान्यः मन् सरदश्यमा। नुस्रायक्षेत्रे त्रिणीशादिंदासदे निंद

<sup>।</sup> भूप' probably is the same as आवर्श which is thus divided :--तत्रावर्गो है। तदाया । लोग्रावर्गं चेयावर्गं चेति । (Dharmasamgraha, sect. CXV).

<sup>2</sup> स्वार भूत, सत्यया (Satya-yuga) is golden age.

वेश्वर, चैत्रः तपुं श्रम् हृशः चैत्रः इशः चैत्रः स्थान् चैतः त्याः शहर्षः शृक्षः स्थान् स्यान् स्थान् स्थान्य स्थान् स्थान्य स्थान् स्थान् स्थान् स्थान् स्थान् स्थान् स्थान् स्थान् स्थान्य स्थान् स्थान् स्थान् स्थान्य स्

द्ययायसः नुवायिः ख्या। वर्दः द्वाः झुदः नुवादः द्वाः स्ट्राः सहितः हैं वर्षेसः नुवायिः स्ट्राः नुवासः देव।। स्ट्राः वर्षेत् प्राः सहितः हैं वर्षेसः नुवायिः स्ट्राः नुवासः देव।। स्ट्राः वर्षेत् प्राः स्ट्राः स्ट्

क्षर चर्ने स्थानी ? अष्ट्या चर्मे र देना रेशर रेटा । क्रिश सिट्या श्रीया

**∄**భ.

<sup>1 💆</sup> is broken and destroyed.

<sup>&</sup>lt;sup>2</sup> নুম্ম' is destroyed.

<sup>3 &</sup>amp; is broken,

まだま列I is broken and destroyed. Instead of ちて列I we should rather read 芳 列I |

b UI is broken and illegible.

<sup>6</sup> Is it a wrong spelling for 口急 meaning eight?

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मुद्रिन्दरः।। यद्द्रन्द्रयत्रे स्मानीत्रन्त्रोत्तः मुद्रान्त्रत्वेदस्य।। दर्देशः सर्वेद्रन्दस्यः

न्तरः सहर्तः सहि स्थ्रीतः सम्बन्धः स्थान्त्रः स्थान्त्रः स्थ्रान्त्रः स्थ्याः स्थयः स्थ्याः स्थ्याः स्थयः स्थयः स्थ्याः स्थ्याः स्थयः स्थ्याः स्थ्याः स्थयः स्थ्याः स्थयः स्थयः स्थ्याः स्थ्याः स्थयः स्थ्याः स्थयः स्थ्याः स्थ्याः स्थ्याः स्थ्याः स्थ्याः स्थ्याः स्थ्याः स्थयः स्याः स्थयः स्थ्याः स्थयः स्थयः स्थयः स्थयः स्थयः स्थयः स्थयः स्याः स्थयः स्थयः

त्रेन्द्र- त्रिनाद्र-अवत्त्रमार्ज्जेनायःद्रः॥ महर्म्यस्युष्यः

बिनिदे द्वो येवास र्स्ट्रिय। दे पी र्से विवास सुनित्र त्या यस गुरू दा। । मालुका

র্মন্থের সামত্র প্রমান্তর ক্রম ।। র্মন্থির সামত্র প্রমান্তর ক্রম্ম ।। র্মন্থির সামত্র সামত্

ट्या ह्निश्चर्यन्ति । अर्थन्त्र क्षा अर्थन्ति । अर्यनि । अर्यन्ति । अर्थन्ति । अर्यन्ति । अर्थन्ति । अर्थन्ति । अर्यन्ति । अर्यन्ति

Text.

Properly arranged.

## ्रा सुरी।

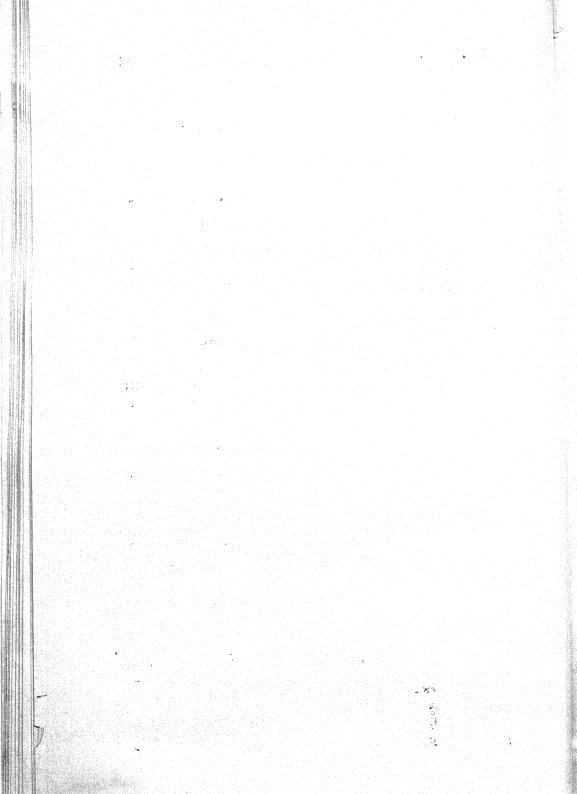
¹ The last letter (あ) is broken.

<sup>&</sup>lt;sup>2</sup> This word is broken and illegible,

<sup>3 55&#</sup>x27; is altogether effaced. It is supplied by the contributor.

सर्विकार्त्वे देश सेनाशन्याय साम्बुर सहन्यते। मैजायप्रस्यात्स्यार्क्यामुजार्क्यामुजाय्या । १ ॥ समास प्रसाम स्थान वर्तरन्तुः क्षुवन्तुवः १८ व्हेर देना व वुदः व।। ३।। क्र्याचील.स् सटाचील.श्रीसर.ड्रे.श्र.ल्र। माध्यमिति सुर सिर्देश हैं नगर नेत्र मान विमाश हैन ।। = ।। लर.यलेचाश.रेचार.क्चा.बर.चाश्चर.बुचा.चर्ड्य.रेट.। दर्रामित्राम्। उ.सळ्य पर्मुर् द्वारस्य र्ता। १ ।। क्र्राय्ट्यार्श्वयार्श्वयार्वित्वर्ग्वर्थः । सरमात्मात्रित्त्रतहसर्नुद्रस्य रेमासत्त्रिद्रसः सत्।। ७ ॥ भविष-पद्भेद्र-पर्मा-क्रेर-कृमाश-एकट-त्मन-श्रुश। क्रियासाम्यासम्बित्यरुशाल्याम्यास्यः के. श्वामनुन्।। १ क्रिंश मुलामानेश या पर्शे न नुस्त सुन मुन न्र माश्रास्त्रमा द्यार स्याम् स्याम् स्याम् स्याम् स्याम् स्याम् ह्येचाश्वास्थाः देशः मीयः संशानवशः नगीयः नर्गे सः वेश। श्चे.चीड्ची.ची्याऱ्यां सी.क्रु.चरंबा हीर-रेटा ।। ७ ।। सद्दाद्वदस्य वर् क्षेत्र द्वाय द्वेत्र कुरा वेत्र दः। यहेब्रस्ट,श्रमां.मुब्र्रस्मीयःमुश्रस्त्रप्ति। 😘 ।। **८**र्मश्रस्त्रं द्रमान्यानः सर्न्याने हेर्ने प्रमुखा मोर्शःसेयशःश्रःसर्वेशः सुर्याशः देशशः वृ.यः नैटः ॥ १० ॥

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 Notes on the Freshwater Fauna of India. No. III.—An Indian Aquatic Cockroach and Beetle Larva.—By N. Annan-DALE, D.Sc., C.M.Z.S.

Little is known of the aquatic or semi-aquatic Orthoptera, which are probably not uncommon in tropical countries, and the only records of aquatic Cockroaches I can find are from Malaya and Borneo. The existence of a species of *Epilampra*, living in an

Indian jungle stream, is therefore a fact of some interest.

In 1900 I recorded certain Cockroaches <sup>2</sup> as having aquatic habits in the Siamese Malay States. It now appears that at least two species were included, probably both belonging to the genus *Epilampra*. One of these is in the habit of resting on logs floating in the Kelantan River, and of diving when disturbed; while the other haunts the roots of trees and other sunken objects at the edge of jungle streams in the Patani States. In 1901, Shelford <sup>3</sup> published a note on two species, an *Epilampra* and a Panæthiid, from the base of a waterfall on Mount Matang in Sarawak,

both species being immature.

On March 4th last, while turning over stones in a small jungle stream on a hill near Chakardharpur in Chota Nagpur, I saw what I took to be a large Woodlouse swimming rapidly along the surface of the water, having evidently been disturbed by the removal of a small piece of rock. On capture this animal proved to be a Cockroach. Unfortunately it is a larva (9) and cannot be identified specifically; but undoubtedly it belongs to the genus Epilampra. When placed in a large jar of water, it swam very rapidly, using all six legs, to the side, which it attempted to mount. As was the case with the specimens observed by Shelford in Borneo, the tip of the abdomen, which was arched upwards, was held out of the water and bubbles of air rose from time to time from the thorax. The Cockroach, finding it impossible to climb up the glass, attempted to dive beneath it. In so doing, however, the Insect was impeded by the air which had become entangled at the base of its legs and between them and the antennæ, which were stretched backwards below the belly. Apparently in order

Acridiids of the genus Scelymena, which are semi-aquatic, have been recorded from Java, Ceylon and Burma; many of the Indian and Malayan representatives of this group can swim well on the surface; and at least one Malayan species can dive. An aquatic Phasmid (Prisopus) is known from Brazil. Wood-Mason (Ann. Mag. Nat. Hist. (5) i, 1878, p. 101) called attention to a Bornean form (Cotylosoma) which he believed to be actually provided with gills; but Sharp (in Cambridge Nat. Hist. V., p. 273, 1895) expresses doubt as to the function of the structures thus interpreted. Miall and Gilson (Trans. Entom. Soc. 1902, p. 284) have described an aquatic cricket (Hydropedeticus) from Fiji; an Indian Tridactylus, common among reeds and sedges in Calcutta, jumps into the water when disturbed and swims on the surface; while species of the latter genus are known to leap on the surface film.

<sup>&</sup>lt;sup>2</sup> Entomologist's Record, XII, 1900, p. 76.
<sup>8</sup> Report Brit. Association, 1901, p. 689.

to get rid of this air, it turned over on its back and swam along belly upwards. Its progress, whether belly or back upwards, was extremely rapid, and it soon became exhausted and remained still at the edge of the jar, with the tip of its abdomen on the surface. When held under the water it drowned in a few minutes, much more rapidly than a specimen of Periplaneta americana would or-

dinarily have done.

An examination of the specimen showed a structural peculiarity which might have been expected from the fact that the tip of the body was held out of the water. The last spiracle is of a slightly tubular nature and projects at the side from below the posterior extremity of the seventh tergite, being provided with a thick ring of chitin. In other representatives, but not in all, of the Epilampridæ I find a similar modification, which in some is more marked than it is in the Chota Nagpur larva. This is specially true of Epilampra pfeifferæ, Molytria maculata and M. badia. 1 In the last (d) the spiracle takes the form of a flattened, somewhat trumpet-shaped tube, which is turned upwards distally and lies almost parallel to the outer edge of the eighth tergite. In the Chota Nagpur larva the other abdominal spiracles are present, but under ordinary circumstances they are hidden beneath the edges of the dorsal and the ventral plates, which close together so as to shut them off completely from the water. Shelford's suggestion that the Cockroaches he took beneath a waterfall in Borneo used the posterior abdominal spiracle for taking in air, and the prothoracic spiracle for expelling it, is very probably correct. It would be interesting to know whether the intermediate spiracles are modified in any way; but the material at my disposal does not permit me to investigate this point. Nor do I know whether the species of Molytria are ever aquatic.

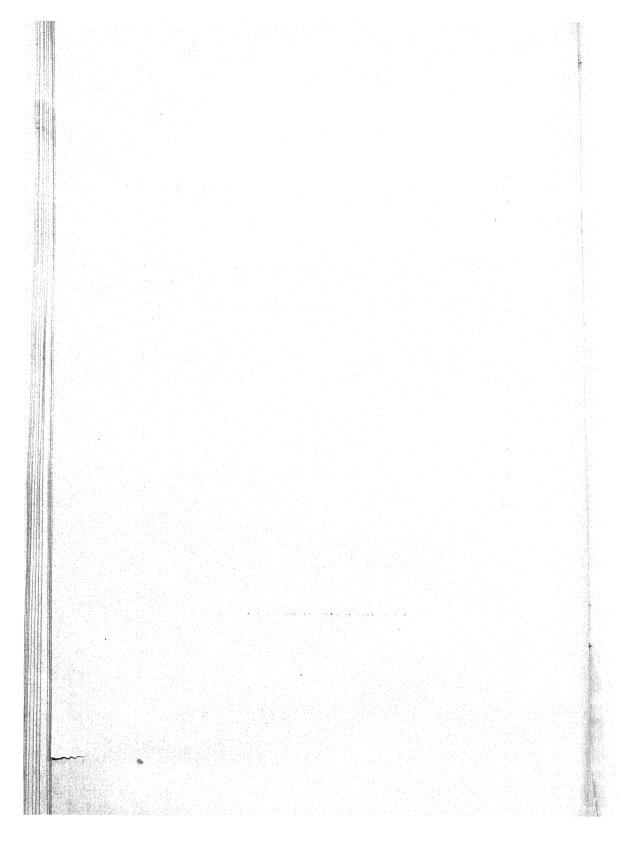
The specialization of the posterior spiracle in these Cockroaches affords in some respects an interesting parallel to that which occurs, in varying degree, in many Water Beetles, Dipterous larva, and aquatic Hemiptera. It is a modification which in some cases escapes notice very easily. In 1900 2 I stated as regards an aquatic Glow-worm, apparently a Lampyrid larva, taken in Lower Siam, that I could not discover any special modification in its structure to fit it for an aquatic existence. I find, however, that a very similar larva, not uncommon in Calcutta among the roots of a floating water-plant-Pistia stratiotes—is devoid of ordinary spiracles but possesses a star-shaped funnel which can either be extended from the posterior extremity of the body or withdrawn into it. This funnel is connected with a couple of very bulky air-tubes, which run along the sides of the body and send out fine offshoots interiorly. The latter ramify and frequently anastomose among the organs of the abdomen and thorax, so that a structure quite comparable to that found in other aquatic larvæ has been evolved. As the funnel

<sup>2</sup> Proc. Zool. Soc., 1900, p. 863.

<sup>1</sup> The identifications are those of de Saussure, who examined specimens in the collection of the Indian Museum.

is generally thrust into the air which is retained under the leaves of Pistia stratiotes, it is seldom possible to see it in use. The complexity and large size of the tubes are probably rendered necessary by the fact that the Beetle is liable to be detained beneath the surface for considerable periods. It is unable to sink without assistance; but when gorged with food it cannot rise readily, and is only able to crawl slowly up the stem or root of some convenient water-plant. Its ordinary method of feeding, moreover, causes it to drop to the bottom. Settling on the upper surface of the shell of any non-operculate water-snail which may approach its hidingplace, it inserts its minute head into the tissues of the animal from The Mollusc retreats as far as possible into its shell and sinks to the bottom, carrying the Beetle with it. Here the latter feeds upon its victim at leisure. I have known an individual to perish, apparently because it could not rise to the surface after such a meal.

I have little doubt that this Glow-worm is the larva of some common fire-fly, possibly Luciola vespertina; I do not think it is that of L. gorhami, an even commoner species in Calcutta, the female of which is winged and abundant. The structure of the head, thorax and feet is essentially that of an ordinary larva of this genus. Possibly, however, the aquatic form may reach sexual maturity, in the case of the female, without leaving the water, and I have reason to think that the female does become mature with very little change of outward form. Specimens in my aquarium have, on several occasions, sunk to the bottom and died, after feeding for some months. Their bodies were distended, and dissection showed them to be full of eggs. Such specimens had no external genitalia, but were evidently about to undergo an ecdysis, their integument being loose and easily separated and a new integument being already formed beneath it.



17. Notes on the Freshwater Fauna of India. No. IV.—Hydra orientalis and its bionomical relations with other Invertebrates.—By N. Annandale, D.Sc., C.M.Z.S.

To my description! of Hydra orientalis I am now able to add the following particulars, which I think establish its position as a

distinct species.

The fully expanded tentacles are at least three times as long as the body. The gonads only occur on the upper two-thirds of the body. The sexes are distinct. The normal egg is subspherical and is set with slender spines which are bifid or expanded at the tip, being more numerous and relatively finer than those on the egg of H. grisea. Eggs without a thickened external shell

are produced under certain conditions.

I hope to publish elsewhere a more detailed account of the structure, life history and distribution of the Indian Freshwater Polyp; but it will be convenient to deal with its relations to other animals in these notes. It should perhaps be explained that I use the term "commensalism," in its wider sense, to include any well-established permanent or temporary connection between two organisms which does not involve positive injury to either. In many such cases it is impossible, with our present limited knowledge of the bionomics of nearly all aquatic animals, to say whether the connection is beneficial to both, or only to one of the organisms involved.

#### COMMENSALISM.

Although symbiotic algae do not occur in the tissues of Hydra orientalis I have found, on several occasions, groups of minute organisms, evidently belonging to the same order of plants as those which live in other species, attached to the surface of the body, generally towards the aboral pole. Probably these are not commensal with the Polyp in any sense of the word, but their presence is interesting as suggesting the commencement of such relations as those which exist between H. viridis and its green cells or between certain corals and their yellow cells. In H. viridis the green cells migrate from the body of the parent into the egg; but this is not the case with the Turbellarian Convoluta roscoffiensis, in which the green colour of the organism, as Keeble and Gamble 2 have recently proved, is brought about by infection with minute algae from the outside. First settling on the external surface of an animal such as Hydra, such algae may have originally penetrated into the tissues by some wound or aperture, only becoming symbiotic in the true sense of the word by gradual adaptation, carried on through many generations, to a new environment.

Of animals living in more or less intimate relations with the Polyp, I have found two very distinct species of Protozoa, neither

<sup>2</sup> Proc. Roy. Soc. B. LXXVII, 1905, p. 66.

<sup>1</sup> See the Journal of this Society for 1905, p. 72.

of which is identical with either of the two mentioned by Saville Kent 1 as commonly found in association with Hydra in Europe, viz., Trichodina pediculus and Kerona polyporum. On two occasions, one in January and the other at the beginning of February, I have noted a minute Flagellate on the tentacles of the Calcutta form. On the first the tentacles were completely covered with this Protozoon, so that they appeared at first sight as though encased in fingellated epithelium. The minute organism was colourless, transparent, considerably larger than the spermatozoa of Hydra, slightly constricted in the middle and rounded at each end. It bore a long flagellum at the end furthest from its point of attachment, the method of which I could not ascertain. When separated from the Polyp little groups clung together in rosettes and gyrated in the water. On the other occasion only a few individuals were observed. Possibly this Flagellate was a parasite rather than a commensal, as the individual on which it swarmed was unusually emaciated and colourless, and bore neither gonads nor The larger stinging cells were completely covered by groups of the organism, and possibly this may have interfered with the discharge of stinging threads.

Regarding the exact nature of the other Protozoon observed in association with Hydra orientalis there is no doubt. It was a Vorticella which agreed in every particular with the figures of Tatem's V. monilata given by Saville Kent (op. cit. pl. XXXV). As this appears to be rather a scarce form in Europe its occurrence in India is interesting. I found several groups, of from eight to twelve individuals each, attached to the upper part of the body of a Polyp in January, 1906. In Europe the species has been taken on water plants, it is improbable that its association with Hydra in Calcutta was more than fortuitous. The fact that I have not taken it except thus associated proves nothing, as I have not yet made anything like an extensive search for Protozoa in the tanks. V. monilata has recently been recorded from Paraguay by von

. Daday.2

On two occasions, while examining living Polyps at the beginning of January, I noticed a small Rhabdocoele which appeared to issue from the mouth. I did not see it, however, actually in the alimentary canal, and possibly it may have come out from be-

hind the body or a tentacle.

Especially in the four-rayed stage, the Polyp not infrequently attaches itself to shells of *Paludina*, and, more rarely, to those of other Molluscs. The smooth shell of this genus seems to be peculiarly attractive to temporary or permanent commensals. In the Calcutta tanks a Polyzoon, a variety of the common European *Plumatella repens*, forms its colonies during the winter

1 A Manual of the Infusoria, I, p. 110 2 Bibliotheca Zoologica, XLIV (1905), p. 43.

<sup>&</sup>lt;sup>3</sup> See Carter in Ann. Mag. Nat Hist. (3) I, p. 169, and III, p. 338. A variety of Plumatella repens occurs on Paludina shells in Europe (see Kraepelin, Die Deutschen Süsswasser-Bryozoen I, p. 121, pl. IV, figs. 113, 114, Hamburg, 1887).

months very commonly upon the living shell, although I have not seen them on that of any other genus and very rarely on any other support. Two other Indian Polyzoa, Histopia lacustris and Pectinatella carteri, have been taken on Paludina shells. The Protozoon fauna of Paludina shells seems also to be large. During summer and at the end of spring, Opercularia nutans is abundant upon them; on several occasions, in January and February, I took colonies of Epistylis plicalilis (which is found on Limneus in Europe) in the same situation and on the operculum; while the less conspicuous forms, as well as Rotifers, observed have been numerous.

It is doubtful whether this temporary association between Hydra and the Mollusc is of any importance to the latter. Even when the Polyp settles on its body and not on its shell (as is sometimes the case) the Paludina appears to suffer no inconvenience, and makes no attempt to get rid of its burden. It is possible, on the other hand, that the Hydra may protect it by devouring would-be parasites; but of this there is no evidence. In the Calcutta tanks operculate Molluscs are certainly more free from visible attack than non-operculate species. This is the case, for instance, as regards the common aquatic Glowworm, which destroys large numbers of individuals of Limnophysa, Limnæus, etc. If it has been starved for several days in an aquarium it will attack an operculate form, but rarely with success. Similarly Chætogaster bengalensis attaches itself exclusively to non-operculate forms. In the one case the Polyp could do very little against an adversary with so stout an integument as the Insect, while, in the other, it is doubtful whether the Worm does any harm to its host. The Polyp would afford very little protection against the snail's vertebrate enemies or against what appears to be its chief foe, namely, drought. As the water sinks in the tank non-operculate species migrate to the deeper parts, but Paludina and Ampullaria close their shells, remain where they are, and so finally perish, being left high and dry, exposed to the heat of the sun.

On the other hand, the association is undoubtedly useful to Hydra. The mud on the shells of Paludina taken on floating objects shows that it comes up from the bottom, to the surface, probably going also in the opposite direction. Moreover, the common Calcutta species ( $P.\ bengalensis$ ) feeds very largely, if not exclusively, on minute green Algæ, as my observations on captive specimens show. It, therefore, naturally moves towards spots where smaller forms of animal and vegetable life abound. The Polyp's means of progression are limited, and, therefore, a beast of burden is most advantageous to it, for it can detach itself when in a favourable habitat. If specimens are kept in water which is allowed to become foul, a very large proportion of them will attach themselves to any snails confined with them. Under natural conditions they

<sup>&</sup>lt;sup>1</sup> In 1906 this species first appeared in abundance during the first week in March in the Calcutta tanks. I did not see it during winter. Unlike most of its allies, it flourishes in small vessels of water kept without aeration.

would thus be rapidly conveyed to a more favourable environment. In the tanks it is far commoner to find young, four-rayed Polyps on *Paludina* than individuals with five or six rays; but the adults of the species are far less prone to change their position than are the young.

Hydra orientalis, especially during spring, exhibits a distinct tendency to frequent the neighbourhood of Sponges and Polyzoa, such as Spongilla carteri and the denser varieties of Plumatella repens, Possibly this is owing to the shade these organisms provide.

#### ENEMIES.

## A Chironomid Larva which feeds on Hydra orientalis.

The insect dealt with in the present note is common in the Calcutta tanks in the months of November, December, January, and February. It ceases to be so as the temperature commences to rise at the beginning of spring. Unfortunately, I have not been able to diagnose it specifically, but, judging chiefly from the characters of the larva, I have little doubt that it belongs to the genus Chironomus although the pupa closely resembles that of Tanypus.

In many respects the life-history of this Indian species is very similar to that of the English forms described by Miall. The eggs are set in a roughly globular mass of jelly from 5 to 10 mm. in diameter, without any very definite arrangement. The mass adheres to the under surface of a Limnanthemum leaf or some other floating object, but sinks if it is detatched. Its surface is sticky, and the minute particles of dirt which adhere to it may serve as a means of concealment. Embryonic development is normal and occupies at least a week.

The larva differs from those of the common European species in not having processes on the ventral surface towards the posterior extremity. At first it is quite colourless, but later it assumes, probably from its food, a pale-pink or greenish tinge. Its greatest

length is about 6 mm.

The pupa could be distinguished from that of such a form as Tanypus maculatus by the long bristles which project from the dorsal surface of the last joint of the abdomen. The breathing trumpets are rather narrow and there are no respiratory filaments on the thorax. The suckers on the dorsal surface of the anterior segments of the same part of the body are large. The pupa clings to submerged objects with their aid; but if they be detached from such objects, it can still remain fixed by means of the bristles and plates on its tail.

The adult is a typical little Midge with a pale-green body and thorax. In the male the latter is without markings, but in the female it bears longitudinal bars similar in extent and arrangement to those which characterize *Chironomus cubiculorum*.<sup>2</sup> It is,

Nat. Hist. Aquatic Insects, p. 122.

Very little is known of the Indian Chironomidæ or Midges. In van der Wulp's Catalogue of the Described Diptera from Southern Asia (1896), the genus

however, much smaller than this species. In both sexes there are a number of dark cross-bars on the abdomen.

The young larva is very active. It is frequently found wandering among colonies of such Protozoa as Vorticella nebulifera and

such Rotifers as the gregarious Melicertidæ.

As the larva approaches maturity, it commences to build for itself temporary shelters. These are of two kinds:—(1) a silken tunnel with its base formed of some smooth natural surface; or (2) a regular tube, often adhering by a short stalk on its base either to a smooth level surface or to some rounded object, and covered on the sides and back with more or less distinct projections. I cannot detect any difference between the larva which makes the tunnel and that which makes the tube, and my captive specimens have never made the latter while under observation. I am inclined to think that the character of the shelter is partly a question of food-supply and partly due to the imminence or non-imminence of an ecdysis.

It is easy to watch the making of a tunnel by a larva in captivity, for it usually chooses the side of the aquarium as the base of its shelter. Having settled on a suitable spot, after stumping along the glass in all directions for some minutes, it becomes stationary. Then, drawing its head backwards and forwards, pressing its mouth against the glass and arching its head through the water some little distance above its back and to the glass again, it rapidly weaves the anterior part of the shelter. The threads are not drawn parallel to one another, but so arranged as to form a wide and irregular mesh. The larva can thrust its head through the structure at any point, but does so seldom. As a rule the ends of the shelter are not straight but concave, as though a bite has been taken off them. This gives the occupant greater freedom of movement. When the anterior half has been completed, the larva turns round suddenly in the tunnel, doubling its body and straightening it again in so doing, and proceeds to spin the posterior half. Then it turns round again, and suddenly darting out from the entrance to half its length, it pulls in, by means of its anterior limbs, a minute particle of extraneous matter, which it dabs on to the case. It does this many times over, and then turns round and does the same for the hinder end of its shelter. Both ends are left open. The elaboration of the shelter differs greatly on different occasions. I had frequently noticed that tunnels brought from the tank

Tanypus is not recorded from British India; but several Javanese species are noted. The larva of one common Oriental Midge, Chironomus cubiculorum, has been found in large numbers in the Calcutta water-works (Ind. Mus. Notes V, 1903, p. 191, pl. XV, fig. 5). Another larva, belonging to the same genns, inhabits the tissues of a fresh-water sponge (Spongilla carteri) in the Calcutta tanks. [I hope to give details of the habits of this form and of other incolæ of the sponge shortly.—N.A., 17-4-06.] I found a third very abundant at the end of January in brackish pools at Port Canning, Lower Bengal. It lived both in the tissues of a second sponge (S. lacustris var. bengalensis) and among the matted colonies of a Polyzoon. In the same pools the eggs of two species were common at the same season. In one the egg-mass was shaped like a Leech, attached at one end; in the other it formed long strings of rather irregular form.

on the under surface of Limnanthemum leaves had a Hydra fixed to them. This occurred in about a third of the occupied shelters examined. The Hydra was always in a contracted condition and often more or less mutilated. By keeping a larva together with a free Polyp in a glass of clean water, I have been able to discover the reason of this, having now observed the process of capture and entanglement in greater or less detail on eight occa-The larva settles down at the base of the Hydra and commences to spin a tunnel. When this is partially completed, it passes a thread round the Polyp's body, which it also appears to bite. This causes the victim to bend down its tentacles, which the larva entangles with threads of silk, doing so by means of rapid. darting movements; for although the stinging-cells of H. orientalis are small, they would prove fatal to the larva should they be shot out against its body, which is soft. Its head is probably too thickly coated with chitin to excite their discharge. Indeed, small larvæ of this very species form no inconsiderable part of the food of the Polyp, and, so far as my observations go, they are always attacked in the body and swallowed in a doubled-up position.

When the Hydra has been firmly built into the wall of the shelters and its tentacles fastened down by their bases on the roof, the larva proceeds, sometimes after an interval of some hours, to eat the body, which it does very rapidly, leaving the tentacles, which still retain their vitality, in position. The meal only lasts for a few minutes; after it, the larva enjoys several hours' repose, protected by the dangerous remains of its victim. During this period it remains still, except for certain undulatory movements of the posterior part of the body, which probably aid in respiration. Then

it leaves the shelter and goes in search of further prey.

Its food, even when living in a tunnel, does not consist entirely of Hydra. I have watched an individual building its shelter near a number of Rotifers, some of which it devoured and some of which it plastered on to its tunnel.

The tubular shelters occasionally found are very much stouter structures than the tunnels; but are apparently made fundamentally of the same materials. Structures, intermediate between

them and the tunnels, are sometimes made.

They are often as much as twice as long as the larvae and have a much greater calibre. Although they can be straightened, they are usully bent, more or less distinctly, in the middle, so that they have a U or V-like form. The stalk by which they are fastened to external objects is situated below, at the junction of the two limbs. Although the tube is too densely covered with particles of dirt, short lengths of some thread-like alga and Protozoa,—for its structure to be easily seen, it has evidently an extremely loose fabric, through which the larva can thrust its head at any point. It clings to the interior of the tube (or of the tunnel) by means of its posterior legs below and of the bunch of bristles at the posterior extremity of its dorsal surface above. The latter can be raised or depressed at will by means of a special muscle. Thus it can drag the tube slowly along a

smooth surface by means of its forelegs. It may live in one tube for at least two days, during a considerable part of which it remains quite still. During this period of quiescence it probably casts its

skin; but I have not been able to watch the process.

On most tubes I have examined there have been colonies of the Protozoon Epistylis flavicans, which is common in the tanks on the roots of duckweed during the winter months. A close examination shows that these colonies are not normal ones like those on the roots; for they appear to be rather the extremities of such colonies, broken off and entangled in stout silk threads, several being fastened together to form each group on the tube. The tubes which did not bear the Epistylis, bore a Vorticella (probably V. nebulifera) instead. I have not seen the larva feeding on these Protozoa, but have very little doubt that it does so, for they disappear gradually from the tube, and when they have disappeared the larva recommences its wanderings.

Thus it would seem that this larva, differing little in structure from its allies, has developed a very peculiar instinct, which enables it to obtain at once food and shelter from animals lower in the scale of structure than itself. Possibly the case is in some respects paralleled by that of the Amphipod *Phronima*, which is found in the empty tests of Ascidians; but it is at once less complex and more unusual than that of the other Crustaceans (such as *Dorippe facchino*) which carry about with them living Coelenter-

ates as a protection and not as food.

As regards other enemies of Hydra orientalis I have little information. I have repeatedly noticed that individuals confined together with larvae of the Dragon Fly coriagrion coromandelianus (which is one of the commonest species in the tanks) have disappeared. Although I have not been able to witness an attack on the part of the Insect in this case, it seems probable that the attack is made; for the larva feeds chiefly, if not entirely, by night.

It is evident, therefore, that the nematocysts of *Hydra* do not protect their possessor entirely from the attacks of Insects, any more than those of marine Coelenterates do from the attacks of fish.<sup>1</sup>

#### PREY.

The food of Hydra orientalis is by no means homogeneous. Cladocera and Copepods are commonly eaten, more especially the former; but Ostracods, and occasionally even members of these other groups, are merely held for a few seconds on the tentacles and then dropped. Rotifers and minute Oligochæte worms are also eaten; but the small Turbellarians which are usually abundant in the tanks during winter, apparently escape attack. Perhaps the great part, and undoubtedly a very large part of the food consists of newly-hatched Insect larvæ, chiefly Dipterous and Neuropterous. Young individuals, as I have noted, of the very Chironomid

<sup>&</sup>lt;sup>1</sup> See Ashworth and Annandale in *Proc. Roy. Soc. Edin.* XXV, 1904, p. 3 (note).

which later preys on Hydra are very frequently eaten, possibly more frequently than any other species, and a common Ephemerid

in its first instars fares but little better.

Food is usually taken in the early morning, before the heat of the sun has become great. This is the period when life seems to be generally most active in the tanks. In Calcutta, Hydra does not feed at night, but remains between sunset and dawn, at any rate when in an aquarium, with partially retracted tentacles.

18. Notes on "Packesi" and similar games, as played in the Karwi Subdivision, United Provinces.—By E. DE M. HUM-PHRIES.

A feature which cannot fail to strike the most unobservant

visitor to the Karwi Subdivision is the village meeting-place.

This is usually furnished with a number of rude stone benches, formed by a horizontal, supported on two vertical slabs. These are arranged roughly either in a circular or in a square formation, reminding one of nothing so much as the remains at Stonehenge. On the surface of these slabs will often be found scored the "boards" of certain games.

During the tour season of 1904-5, I collected the rules of some of these games, so far as I was able to ascertain them in the

very limited time at my disposal.

The following notes, which have no claim to be considered exhaustive, embody the substance of the information so obtained.

#### Pachesi.

The most familiar of these games is that known as "Pachesi." It is played on a board marked out as in the accompanying diagram (Fig. 1).

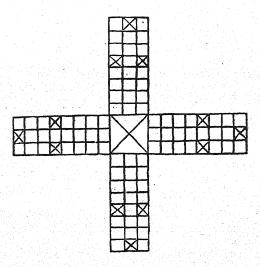


Fig. 1.

Each arm of the cross is divided into three rows of eight squares. Of these the fifth from the end of each of the outer rows, and the middle square of the bottom row are marked with a diagonal cross to indicate that a piece on one of these squares is safe from capture.

The game is played by four, but may equally be played by two, or even by three persons, each of whom has four "men," distin-

guished by their colours or their materials.

Each player sits opposite one arm of the cross, and his object is, starting from the centre of the board down the middle and up the left-hand row of his own arm of the cross, to move his four "men" all round the board, finally bringing them down the right-hand side and up the middle row of his own arm and landing them in the triangular space in the centre.

The first to do this wins the game.

The moves are regulated by the number of cowries which fall with the slit uppermost out of seven, which are thrown from the hand without the use of any dice-box. The following table gives the value of the various throws:—

f all 7	cowries fall	with the	slit upp	ermost,	the throw	
,, 6	• ••	- ,,		,,	,,	,,
,, 5	,,	,,		,,	•,	.,, 2
,, 4	,,	"		,,	**	••
,, 3	<b>,</b> ,	,,		· ••	• • • • • • • • • • • • • • • • • • • •	••
,, 2	"	**		,,,		
,, 1	3,5	,,		,,	14	
r none	,,,	11		11		**

A "man" may be placed on the board only when either 10, 25 or 30 is thrown.

When a "man" is so started, he is placed on the square corresponding to the number thrown, counting down the middle and up the left-hand row.

Once a "man" has been started, every throw can be utilised by pushing on a "man" for a number of squares corresponding

to the number thrown.

If the square to which a "man" should be moved is occupied by one of the adversaries' "men," the latter is captured and must be

by one of the adversaries' "men," the latter is captured and must be removed from the board and begin its round exactly as if it had never been placed on the board at all. A piece is exempt from capture while on one of the refuges marked on the board with a cross, or when it has turned into the middle row on his way home. A player may not take one of his own "men" past a refuge occupied by one of the adversaries' pieces.

When a "man" reaches the middle row he cannot get "home," unless his player happens to throw exactly the number required to

bring him there.

For instance, to a "man" placed on the fourth space from "home," a throw of 5 or more is of no use: a throw of 4 would bring him "home," while throws of 3 or 2 would not improve matters, though, if there were no other "men" on the board that he could move, such a throw would have to be utilised by moving the "man" up accordingly.

When a "man" reaches the last square of all, he has to wait till either 10, 25 or 30 is thrown. When one of these numbers is

thrown, the player has to throw again, and, if one of these numbers is again thrown, the "man" has to be removed and begin again from the beginning.

The word for "throwing" the cowries is 'pakkana'; i.e., to

"cook" them.

The above represents what I understand to be the rules of the game as ordinarily played. There are, however, variations in the rules, some of them too complicated to be understood in the very short time at my disposal. For instance, I was informed in one village that, if in the course of the game, after all the pieces were on the board, 10, 25 or 30 were thrown, the player did not move, but threw again. If any of the above numbers were again thrown, he had to throw a third time. If they did not turn up, he added the amount of the second to that of the first throw and moved accordingly. If, at the third throw, one of the three magic numbers again turned up, the whole score was cancelled, but he had another throw.

Should, however, either 7 or 14 turn up, then the whole score could be counted. In that village, if all the seven cowries fell with the slit uppermost, it counted 14, and not 12 as given above. It is not unlikely that my original informants were wrong in this

particular.

## Chonpa.

Another variant is known as "Chonpa" or "Chaunsarh."

It is played by four persons, each having four "men," coloured respectively black, yellow, green and red. The two former play

in partnership against the two latter colours.

The board is the same as that already described, with the exception that the refuges mentioned in the case of "pachesi" are either not marked at all or are disregarded, if the board is one made for both games. A single piece may, and a pair may not, be captured on any square to which a hostile piece may be moved.

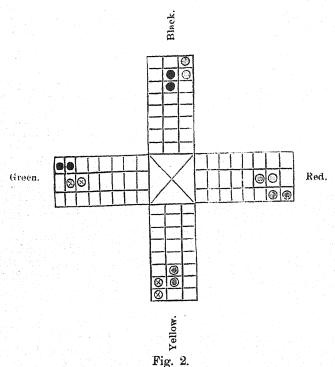
The moves are regulated by throwing three dice: not, as in the case of Pachesi, by cowries. These dice are of bone or ivory and are about 2½ inches long, marked on their long sides with the

numbers (1), (2), (5) and (6).

They, too, as is usual in this country, are thrown from the

hand, without the use of a dice-box.

The "men," known as mard, or got, are placed as follows:—
On the arm of the cross occupied by the player who has taken the yellow "men," are placed two yellow "men" on the second and third squares from the bottom of the middle row, and two green "men" on the first and second squares of the left-hand row respectively. Similarly on the arm of the cross to the right of him are placed two red and two yellow "men": on the arm opposite his, two black and two red "men" and on the arm to the left of him, two green and two black "men." This will be more clearly understood from the accompanying diagram (Fig. 2) which shows the board set out for the commencement of this game.



The first two "men," i.e., those which occupy the first two squares of the left-hand row on the adversary's arm of the cross, always move in pairs, while the last two move singly. A pair may be moved only when a pair is thrown. If the dice all turn up different, then only one, or possibly both of the single pieces may be moved for a total number of spaces corresponding to the total thrown. If two out of the three dice fall alike, then the pair may be moved for the pair thrown and the single piece for the single throw. A throw may be split up and used to move on two or more pieces. For instance, if a 6, a 5 and a 1, are thrown, then each of the two single pieces may be moved on 6 places, or one may be moved 5 places and the other 7, and so on.

When three "men" come to occupy the same space, if all three dice turn up alike, then each of these three "men" can be moved forward for double the number of spaces shown by the dice, i.e., if three sixes are thrown, then each of the three "men" can be

moved forward twelve spaces.

When a "man" has reached the middle row on his way "home" he cannot reach "home" unless the exact number required is thrown. When, however, the last "man" has reached the second, third, or perhaps other squares in this row, the thrower is at liberty to score on two dice only, or even on one, as he may find convenient.

When a player has got all his own pieces, "home," he uses his throws to help his partner.

## Rang.

Another form of the game is known as "Rang." It is played by two persons. Of these one takes the black and the yellow: the other, the green and the red. They sit opposite each other and each takes two arms of the board. Whichever colour a player starts with, he must get all the men of that colour "home" before starting those of the other colour.

### Ahtarah Gutti.

Far more common, however, even than Pachesi is the game known generally as "Ahtarah Gutti" and also as "Bazi Mar," "Tichha" or "Bangala."

It is played on a board of 37 spaces, arranged as in the accompanying diagram (Fig. 3).

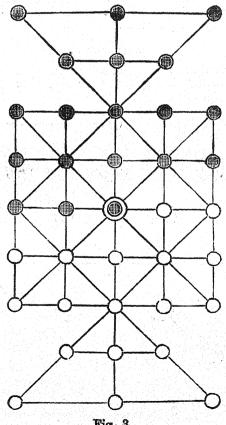


Fig. 3,

Each of the two players has 18 "men," represented, as usual, among the thrifty villagers, by pieces of kankar on the one, and of tiles on the other side. The middle space is left vacant, and the player having the first move must move a "man" on to that space.

The moves are much the same as those of a king in draughts, i.e., a piece can be moved one space at a time in any direction. backwards or forwards, provided that the space to which it is sought to move it is vacant and is in the same rank, file or diagonal as that from which it starts. Captures are made, as in draughts, by leaping over the piece to be captured in any direction, provided that all three spaces are in the same straight line. Any number of pieces may be captured in succession in one move. .In no part of the board is a piece safe from capture: not even in its own bungalow, as the triangular excrescences at either end of the board are called.

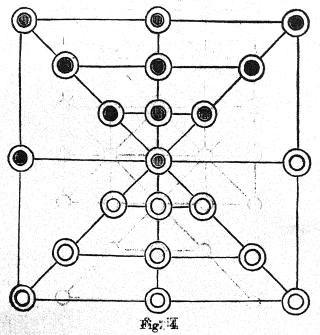
For obvious reasons it is considered advisable to occupy the spaces along the edges of the board, and particularly those at either extremity of the horizontal diameter of the original square.

The game is decided when one player has succeeded in cap-

turing all his adversary's "men."

## Kowwu Dunki.

There are several variants of this game. Of these, one, known as "Kowwa Dunki," is played on a board of 21 spaces, arranged as in the accompanying diagram (Fig. 4).



n i pri d

The same game is played at Bargarh on a slightly different board, as shown in the accompanying diagram (Fig 5).

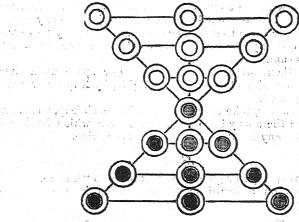


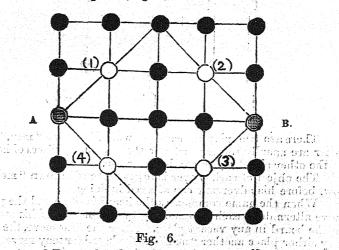
Fig. 5.

The rules of both these games are the same as those of Ahtarah Gutti.

Bagh Gutti.

Yet another variant is that known as "Bagh Gutti."

It is played by two players on a board of 25 spaces, arranged as in the annexed diagram (Fig. 6).



On A and B are placed two large pieces, usually of kankar or tiles. These are called bagh ("tigers"). The other player has 20 smaller pieces. These he places, five on each of the spaces numbered (1), (2), (3) and (4).

His object is so to surround the "baghs" as to prevent them from moving in any direction: while their object is to capture all

his "men."

The player with the 20 "men" has the first move. He takes one piece from any of the four heaps and moves it on to any contiguous space in the same rank, file or diagonal. He may move one space at a time in any direction, provided that the space to which he moves is vacant.

The bagh then moves. He may move one space at a time in any direction, and captures, as in draughts, by leaping over the

piece to be captured.

He can, however, take only one "man" at each leap, no matter how many men there may be on the space over which he leaps. He may capture any number of "men" in succession.

## Sujjua.

Another very popular game is that known as "Sujjua." It is played on a board of 24 spaces, as in the annexed diagram (Fig. 7).

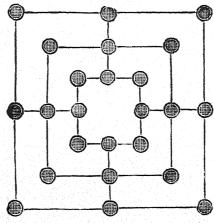


Fig. 7.

There are two players, each of whom has nine "men." The latter are usually represented, one the one side by pieces of kankar; on the other side by pieces of brick or tile.

The object of each player is to get three of his own "men" in a

row, before his adversary can succeed in doing so.

When the game commences the board is clear and the players move alternately, each commencing by placing one of his own men on the board in any vacant place. After the first move, the player may either place another "man" on the board, or may move a piece already on it one space at a time in any direction, provided that the space to which he wishes to move it is vacant.

This very closely resembles the old English game of "Nine

Men's Morrice."

Quite recently, on visiting a ruined Chandel temple known as the "Baldewa" close to the railway line, about two miles from the Karwi railway station, I found the "board" of this game marked on one of the vertical sides of a slab in the wall of the inner shrine. It was impossible to resist the conclusion that the game had been played on that stone before it had been used for the building of the temple.

## Pachgarhwa.

Another game, which appears to be more popular than its intrinsic interest would seem to merit, is known as "Pachgarhwa."

It is played by two persons, who take opposite sides of a board of ten spaces, arranged as in the accompanying diagram (Fig. 8).

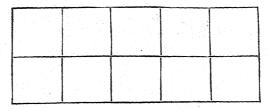


Fig. 8.

The game commences by each player placing five pieces of kankar or similar material on each of the five spaces on his sides of the board.

There is no distinction in size, colour or material between the

"men" of either player.

When the board has been thus set out, the player whose turn it is to move takes up the five pieces from any one of his spaces and proceeds to work round the board from the space to the right of that from which he has just taken the pieces. He drops a piece on each space, whether of his own or his adversary's, as he proceeds.

When he has thus exhausted his five "men," he takes up the pieces on the sixth space and continues the process, until he happens to deposit his last "man" on a space, the next in order to which is vacant. When this occurs, he takes as many pieces as may be on the space immediately beyond the vacant one. His turn then is over, and his adversary proceeds to move in the same way, but

in the opposite direction.

Thus the game, which is well-nigh interminable, goes on until all the pieces on the board are exhausted. Even then it does not stop, but begins again by each player filling up as many spaces as he then has multiples of five in his possession. If one player has, say, three, and the other two "men" over, then each has an interest in one square proportionate to the number of pieces placed by him on it.

By that time things began to get complicated and I was un-

able to discover how, if ever, the game did end.

### Kowwa Dand.

There remains a kind of "Solitaire," known as "Kowwa Dand."

I had great difficulty in learning the rules of this game, as the man who gave me the diagram had forgotten them, and the patwari, the only man in the village who knew the game at all, had not played it for years.

It is played by one person on a board of ten spaces, arranged as in the subjoined diagram (Fig. 9).

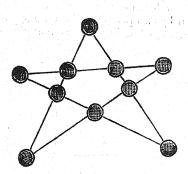


Fig. 9.

The object of the player is twofold. He has first to get all his nine "men" on the board, and then to get all but one off again.

The moves allowed are as follows:—

(1) When placing the "men" on the board, they may be moved from any one space to the next but one in the same straight line, provided that it be vacant. It is permissible to leap over an intervening "man."

(2) When removing the pieces from the board, they are taken, as in draughts, by leaping over the piece to be captured on to a vacant space in the same straight line.

# Rang Mar.

Although I have not given much time to the study of card games, yet there is one such game played in the subdivision, which deserves mention. It is known as "Rang Mar."

It is played by three persons with an ordinary pack of cards.

The two of diamonds is taken out, in order that the pack may be divisible by three, and the cards are then dealt out to each player as in whist. The player who happens to hold the ace of spades must play it, and each of the others must follow suit, if possible.

After this forced lead, which, of course, wins the trick, as the ace is, for the purposes of this game, the highest card, the leader may open any suit which he prefers. The game then proceeds very much as when "No Trumps" are declared at bridge.

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Each player plays for his own hand alone, and the game is decided by the number of tricks scored.

"Points," I presume, are settled by mutual agreement before

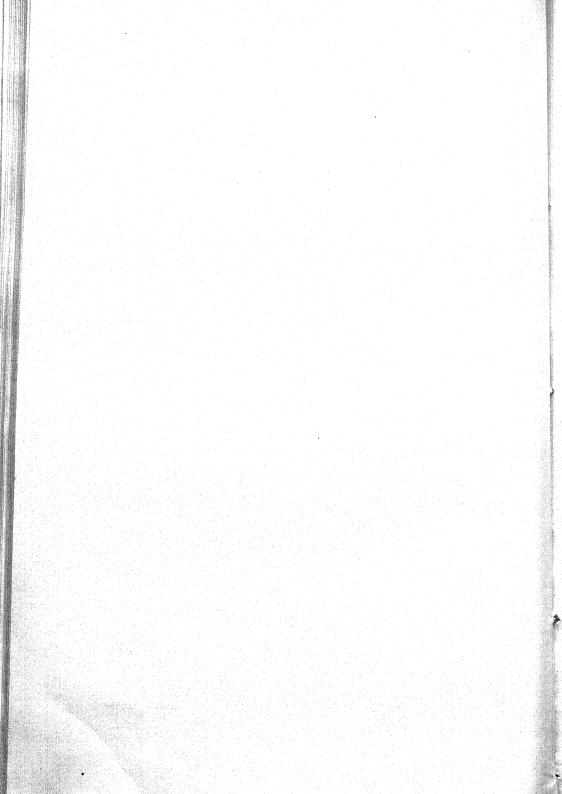
commencing to play.

I asked my informant what was the penalty for a revoke. He did not understand this at first, but when a pack of cards was produced, I showed him how, quite by accident, of course, such a thing might happen.

He had evidently not given the subject much thought and was not at first aware of the advantage which might be gained by such

an accident.

When this was brought home to him, he remarked that, if such a thing were "detected" that trick would not be allowed to count.



 On the Hindu Method of Manufacturing Spirit from Rice, and its scientific explanation.—By J. C. RAY. Communicated by Dr. P. C. RAY.

To the student of history and to the student of science alike, the method of manufacturing alcoholic spirit from rice, which is followed in some parts of Bengal, presents many interesting features. The Hindus are proverbially conservative in their principles and actions, and any practice found described in an old Sanskrit author may be expected to prevail up to the present day even though the circumstances may have altogether changed. Moreover, the manufacturing process which is followed for profit and found remunerative is not changed with change of empires and altered economic conditions. It is a fact worth repeating that drinking was not absolutely prohibited in ancient India, and that on such occasions as rejoicings after a victory the soldiery freely indulged in alcoholic liquor, though Manu, the ancient moralist and lawgiver of India, condemns the use of surás or distilled liquors. Three kinds of liquor were known during his time, viz., Gouri prepared from molasses, Mádhvi from the sweet flower of Bassia latifolia, and Paishti from rice and barley cakes. Of these three the last one-Paishti-was reckoned as the most common. The surâs were included under a generic term, madya, meaning every kind of alcoholic drink. The word Kohala occurs in Suśruta, a Sanskrit medical treatise at least as old as the 5th century A.D. It means there a particular spirit made from powdered barley. Another word Jagala occurs in Susruta and in a much earlier work called Charak where Kohala is not found. Jagala means a kind of rice-beer. It is well known that Hindu physicians were at one time invited to reside at Bagdad, and were court physicians during the Caliphate. Hindu medical works were studied and translated by Arabian scholars into Arabic. It is, therefore, probable that the Arabic word Alcohol—the same as the English word—had an Indian origin.1

From this brief historical sketch it appears that the art of fermenting starchy and saccharine substances was understood and practised in India. There is no reason to believe that the Indian

<sup>1</sup> The late Prof. Monier Williams in his Sanskrit-English lexicon derives the Sanskrit word Kohala from ko and hala (?) as in the Sanskrit word kutahala, and gives the following meanings:—(1) speaking indistinctly; (2) a sort of spirituous liquor; (3) a kind of musical instrument. These three meanings are more or less associated with drinking parties. Vichaspati, an Indian lexicographer, derives Kohala from Ku =the earth and hala to defy—meaning that which makes a man defy the world. A better derivation is perhaps from Ku earth or earthly or bad, hala poison. Cf. Halahala = hala + a + hala = venom. Kohl in Arabic means a collyrium or antimony reduced to a fine powder, used for the eye. The origin is, however, unknown. English authors derive the word alcohol from al Arabic the and cohol from Hebrew, meaning collyrium for the eye. But the mixed Arabic and Hebrew derivation appears to be far-fetched.

distillers have greatly deviated from the old lines. We may, therefore, take the method described below as essentially indi-

genous.

Description of Method.—In Orissa, the bulk of the spirit consumed by the poor people is manufactured from rice. The following description applies particularly to the method followed at the Central Distillery situated at Cuttack and controlled by Government 1:-

Husked rice called Atap (i.e., sun-dried) is first of all softened in moist steam. For this purpose water is boiled in a large earthen vessel (hándi) placed over a fire. Upon this hándi, is placed and luted with stiff clay another having a pretty large hole at the bottom. The hole is covered with a piece of coarse cloth, and upon this rice previously washed carefully with water is laid. The mouth of this second hindi is partially covered by means of a wicker-work basket. The steam from boiling water below rises through the moist rice above and softens the grains. The steaming is usually done in the morning and takes about half an hour for each charge of rice. The grains swell up, but are not allowed to form a paste. The steamed rice is then put in a heap when the heat and moisture complete the softening of the grains to their Towards evening the rice is thoroughly mixed with powdered Bákhar-a mouldy vegetable composition prepared and sold by a low-caste people of the hills of Orissa in the form of small balls about the size of walnut. The proportion of Bákhar to rice is about three chhittaks of the former to half a maund of dry rice, i.e., about one part in 100. The rice is then placed in a basket for about 24 hours. During this period the temperature of the rice slowly rises several degrees above the air temperature. On one occasion I found the temperature to rise 10° F. from 84°F. to 94°F. The rice is now spread on an earthen platform, about two feet high, in the form of circular cakes about a seer (2 lbs.) in weight and an inch thick. In a day the temperature again rises, and the rice grains begin to be gradually entangled in the filaments of a mould fungus. In three or four days the grains become so far entangled that the cakes can be lifted without destroying their shape. They are now piled up one above another and left in this state for another period of four or five days. During this the mould becomes black and each grain of rice densely coated with it. The cakes are now put in large earthen vats, and water poured in. On the following day an equal weight of fresh and steam-softened rice is added. The rice for this purpose is more fully softened than that meant for cakes, by adding a certain quantity of water to it during steaming. The vats are jars of unglazed pottery of capacities of 32 to 40 gallons. These are halfburied under the earthen floor of a thatched shed. The proportion of water added is 20 gallons for each mound (82 lbs.) of rice caked and fresh (uncaked), i.e., about 2½ parts of water to one of rice. Previous to charging the vats they are fumigated by burning straw

in them. The mixture of rice and water is kept in the vats for 8 to 10 days according to season, longer time being necessary in winter than in summer. After the fermentation that takes place in the vats has ceased, this being ascertained by noting the cessation of bubbles of gas and clarification of the upper portion, the wort is distilled in earthen stills. These consist of two large jars, one forming the alembic and the other the receiver, their heads being connected by means of two tubes of straight pieces of bamboo. The receiver is placed in a tub and kept cool by sprinkling water upon it. The fireplace consists of a rectangular pit in which wood is burned. Lately following the advice of Government Revenue Officers the distillers at the Central Distilleries have replaced the pottery stills by copper ones with worms which

cause a more rapid condensation of vapours.

The whole process takes 20 to 22 days. It will appear very primitive; though, judging by results, it is by no means unsatisfactory. The average yield of spirit from a maund (82 lbs.) of rice at the Cuttack Central Distillery is about 4 gallons of Proof spirit. The maximum yield is obtained in January when it may rise to 45 gallons, and the minimum in October when it may be as low as 3.66 gallons. The average yield in January of the last three years (1901-03) was 4.28 gallons, and the same in October 3.85 gallons, making a difference of 0.43 gallons. These averages have been struck off from several hundreds of gallons of spirit manufactured, and may be taken as normal averages. The temperature of fermentation is not in any way regulated by the distillers. nor is the general modus operandi controlled by the Superintendent appointed by Government. The distillers who are servants of absentee capitalists go by the rule of thumb and do not always evince much interest in securing good profit for their masters. The masters, too, have no permanent interest in the manufacture, as licenses to distill spirit are renewed every third year and given to the highest bidders. In the circumstances the servants are the actual manufacturers for their ever-changing masters, and have no interest in modifying or improving upon the traditional method.

III. Explanation.—I am not aware if anyone has scientifically explained the process detailed above, nor have I had any access to the literature of the subject. Indeed, the only special literature which I could consult during my investigation consisted of (1) the Report of the Bengal Excise Commission, 1883-84, and (2) the "Brewer, Distiller and Wine Manufacturer" published by Churchill. The Report does not enter into the scientific aspect of the question, nor does it deal with the manufacture of spirit from rice as prevails at Cuttack. Churchill's handbook describes the European process which bears no resemblance to the Indian method.

In the brewing process of European distilleries barley is first soaked in water and allowed just to germinate at a suitable temperature. A soluble ferment or enzyme called diastase is formed in the grain. The barley is now heated at 122-212°F. in order to

stop germination. The barley thus treated is known as malt. Next raw material, i.e., unmalted material (such as rice, potato and other substances rich in starch) is reduced to a pulp with water and mixed with a certain proportion of malt. The mixture is kept at about 140°F. for about 1-4 hours when starch is converted by diastase into dextrin and sugar (maltose). After the mixture has cooled to about 60°F. yeast is added, and the mixture kept until alcoholic fermentation due to yeast is at an end. The weak solution of alcohol thus formed is next distilled. grain alone is sometimes used, as it is believed to yield a larger quantity of spirit, with greater facility and in less time. As a general rule a mixture of malted and unmalted grain is used in the proportion varying from 1 to 2 to 1 to 3, 4, even to 15. The proportion of grain to water is roughly about 1 to 4, and yeast is added to the mashed liquid in quantity varying from 1 to 12 per cent of the mash.

Now, in the Indian process, husked rice is used, and there is no possibility of germination of husked rice, and that at the temperature of 212°F. Yeast is never added to wort nor wash fresh or All that is added to rice besides water consists of Bákhar. Its importance was not properly understood, though the country distillers know very well that it must be used with rice, or there would be no fermentation. Indeed, the rise of temperature of steam-softened rice mixed with Bákhar might lead one to guess that some sort of fermentation took place in the rice. In my preliminary experiments I kept for a few days steam-softened rice mixed with water only, and another quantity mixed with water and a very small quantity of wort from the distillers' vat, and found that there was no alcohol formed in the first case, and that a minute quantity was present in the second, the alcohol in this case probably came from the wort added. Boiled rice was mixed with water, and yeast from Toddy added. Rice did not dissolve and alcohol was not formed in any appreciable extent. So again, with a view to ascertain the necessity of caking, a series of trials were made by me on a small scale. These showed that caking of rice is as essential as the addition of Bákhar, and that no caking takes place without Bákhar. Every distiller knows that yield of spirit is low when cakes are not well formed, as is sometimes the case. I have examined the whole process and found it to be based on scientific principles.

(1) Båkhar.—Båkhar is a black and mouldy mixture of powdered rice, barks and roots of various plants. A cold infusion of powdered Båkhar in water was filtered and chemically examined. It had slightly acid reaction and contained maltose. Starch was boiled with water into a thin solution, and a few drops of the infusion added to it. The starch was quickly turned into dextrin. On warming the mixture the starch was turned into maltose. Hence Båkhar extract contains a diastase enzyme possessing the power of converting starch into dextrin and maltose. The presence of maltose in Båkhar is evidently due to the conversion of a portion of the starch of rice used in the preparation.

Under the microscope,  $B\acute{a}khar$  shows spores and a dense coating of mould fungi interweaving fragments of barks and roots of plants and of powdered rice. Pills of  $B\acute{a}khar$  were broken into pieces and kept moist with water for a day. There was growth of fungi which were found mostly to be a species of Mucor. The hyphæ are rather thin, measuring about 0.006 mm. in breadth. The spores are black or brown, spherical in shape, with asperities all over and measure about 0.004 mm. in diameter. The mould on ripe cakes was also examined and found to be the same fungus ( $Mucor\ racemosus?$ ) but with thicker hyphæ. Sometimes Aspergillus and less often Eurotium make their appearance on cakes. The presence of these fungi is detrimental to good outturn and is regarded as accidental.

Formerly it was thought that the fungus (Mucor) grew on cakes from spores floating in the air, and the writer was once asked by an Excise officer to suggest means by which mould could be avoided or checked. It will be seen more clearly later on that it is purposely grown on rice from spores contained in Bákhar. I cannot say whence the spores are obtained. They may come with the barks and roots used. Probably Bákhar-makers add a bit of old Bákhar to fresh mixtures of rice and barks and thus keep up

the culture of the particular fungus for their trade.

The names of the plants used and the importance of each in alcoholic fermentation are questions not yet throughly gone into. The reason is that Bákhar-makers keep the ingredients secret, and no attempt has been made to ascertain their scientific names. Whatever they are, there is little doubt about the general nature of the composition. This will appear from the long list of vegetable ingredients used in making Páchawi and appended to the Bengal Excise Commissioner's Report already referred to. It is said that all the ingredients are never used at one time. Nor does it appear necessary to do so. The object of having them at all in Bákhar is rather difficult to understand. For the fungus can be grown on boiled rice by mixing with it a small quantity of ripe cake. Probably the barks and roots help the growth of the fungus, as we know how quickly mould appears on moist mixture of pounded barks and roots-more quickly and vigorously indeed than on boiled rice alone. It is well-known that the purer an organic substance is the less favourable it is for growth of moulds.

The plants of the list may be broadly divided into four groups

according to their known general properties :--

(i) Some possess medicinal properties, e.g., Tribulus terrestris (Gokhur), Desmodium gangeticum (Sálpán), Uraria lagopodioides (Chákuliá), Solanum Jacqinnii (Kantakári), Hemidesmus indicus (Anantamul), Asparagus racemosus (Satamuli), etc.

 (ii) Some possess bitter principles, e.g., Andrographis paniculata (Kálmegh), Oldenlandia herbacea (Khetpáprá), Azadirachta indica (Nim), Justicia Adhatoda (Básak),

etc.

(iii) Some possess tannin, e.g., Terminalia Chebula (Haritaki), Terminalia tomentosa (Piásál), Cassia fistula (Sondal), Diospyros tomentosa (Kendu), etc.

(iv) Some possess narcotic principles, e.g., Datura (Dhuturā), Plumbago zeylanica (Chita), Strychnos Nux-vomica (Kuchilā), Cannabis sativa (Siddhi), etc.

The last-named ingredients are evidently addded in order to make weak spirit appear strong, though Dr. Warden, Chemical Examiner to Bengal Government, did not find in distilled spirit any trace of the narcotic drugs purposely mixed with wort (Bengal Excise Com's Report). The deleterious drugs are meant to be used in Bákhar for Páchawi-a country beer from rice. Boiled rice and powdered Bakhar are mixed together and left to ferment in a closed vessel. The liquid that exudes from the rice is Páchawi. It is not distilled. So the narcotic drugs exert their effect, at least partially, on the consumers who are generally lowclass aboriginal tribes. Páchawi is a weak liquor, and cannot intoxicate a man unless drunk in excess. To the low-class habitual consumers of cheap liquor, it is an advantage to have an infusion of deleterious principles mixed with the weak Páchawi. Probably this was the liquor used in India in olden times, and distilled spirit from it or rice-cakes came later in use. Manu-the ancient moralist—speaks of Surá as the dregs of rice, &c. Likewise Apastamba, another ancient law-giver, forbids all intoxicating drinks and food mixed with herbs which serve for preparing intoxicating liquors. The use in Bákhar of ingredients possessing bitter principles also tend to show that it was at first intended for beer only. The bitter ingredients act like hops in English beer, preserving the beer, and giving it a bitter taste. The medicinal ingredients are added with a view to enhance the medicinal virtues of beer, and also to correct any ill effects of the liquor. Old Sanskrit writers on Hindu medicine enumerate the virtues of liqueurs and cordials made with particular drugs. Páchawi literally means product of fermentation or putrefaction, and has no connection with Paishti—the Surá or distilled spirit obtained from rice-cakes. This definition of Paishti is taken from Manu and his annotators, and fully applies to the rice-spirit dealt with in this paper. spirit—the Indian whiskey—as well as the Indian rum from molasses and saccharine flowers of Bassia, were condemned by Manu forthe three higher castes, probably because the liquors were made strong by distillation, and perhaps also because distillation could only be carried out by the very low caste unclean people of distillers (the Saundika). Manu also mentions the use of Bákhar. which is called by him Kinva (from kana, particle or powder). The word Bákhar or Bákar I would take to be a corruption of the Sanskrit word Balkal, meaning bark of trees. The Bengali word Bákal is the same as Sanskrit Balkal and the distillers' Bákar, the terminal l and r being interchangeable in Sanskritic languages. The more colloquial Bengali word Bákál, which means the necessary adjuncts of a preparation, is probably derived from Bákal and is allied to the Arabic word bagl meaning herbs.

(2) Caking.—To turn to the process of manufacture, we see that it consists of three stages, viz., (1) forming of cakes; (2)

brewing in vats; and (3) distillation.

The first step in the forming of cakes is the moistening and softening of rice and mixing with Bákhar. The rice chosen is Âtap, i.e., merely dried in the sun without previous steeping and boiling in water while in the paddy. For it is superfluous to make the rice undergo the semi-softening process considered necessary in rice used for food. The rice for caking is not boiled in water, as that would partially dissolve the starch and not only cause its waste but also interfere with the growth of Mucor fun-

gus exclusively. This will be seen more clearly later on.

An examination of softened rice mixed with Bákhar and left covered in a basket for a day, shows that it contains small quantities of dextrin but no sugar. Under the microscope, minute specks of Bákhar are seen adhering to the grains which are now half dry. The spores of Mucor begin to germinate, and as a consequence temperature of the rice rises. On the second day the fungus will be seen just spreading out hyphe. On the third day there will be seen vigorous growth, the cakes feel warm and begin to appear greenish-black or black. By this time sporanges have formed. Some burst; spores come out and cover the cakes. The carbonization that takes place in the hyphæ makes the cakes turn black, Along with this the hyphæ become hard and brittle. The cakes when first laid out contain just sufficient moisture for germination of the Mucor spores and subsequent growth of the hyphæ. In a day the grains are more dried up. This produces two effects: (1) any spores of fungi floating in the air and settling on the cakes do not get moisture enough to germinate on them; (2) growth of Mucor is stunted, the filaments slender and the fungus comes to maturity rapidly. If rice is kept moist, there is greater vegetative growth of the fungus, and the grains of rice become spongy with the consequence that they do not easily sink into the water of vats. It will be presently seen that complete immersion in water is essential for alcoholic fermentation. As a further result of excessive moisture, the lower grains of rice remain almost unattacked by Mucor, Bacteria grow and an acidliquid exudes. These facts partly explain low yield of spirit in the moist months. In the course of the few days the cakes are left piled one upon another, the grains are slowly penetrated by the hyphæ, as drying proceeds from surface inwards. From this we see that very dry air is unfavourable for successful caking, and as a consequence a second minimum in yield of spirit takes place in March and April—the two driest months in the year.

Fully-formed cakes, when coarsely powdered and heated with water at 122°—140° F. for about ten minutes, dissolve partially. The solution contains dextrin, a very small proportion of sugar (about 2°/<sub>o</sub>), and diastase. One part of cake can convert into dextrin 100 parts of starch in solution with water at 86° F. in about 10 minutes, and 200 parts of starch at 104° F. in about 5 minutes. One part of cake can quickly convert into sugar 20 parts of starch

solution if heated to about 200° F These results of experiments conclusively prove that *Mucor* growing on soft and half-dry rice changes its albuminoid into diastase and its starch into dextrin and sugar.

Hence Bákhar may be defined as a Mucor spore ferment, and

fully-formed cake as malt.

(3) Brewing.—Let us now turn to the changes that take place in vats charged with fully-formed rice-cakes and water. The grains of rice are disorganised and fall into pieces. The hyphæ are more or less destroyed and broken into minute fragments. Some of these fragments show the remarkable phenomenon of budding. This is, however, rare. The usual case is that most of the spores submerged in water swell up and germinate, each sending out a thin filament. The brownish spores germinate in twenty-four hours, the more black ones take much longer time. The filament produced is filled with granular protoplasm which soon collects into numerous minute parcels. Dividing septa separate the parcels into cells which multiply with great rapidity by budding. These cells—Mucor-Torulæ—have the power of se ting up alcoholic fermentation in a sugary fluid just as Yeast-Torula. In appearance, Mucor-Torula strongly resembles Yeast-Torula, and may be easily mistaken for the latter. The only sure way of distinguishing between them is to grow them on boiled rice. Mucor-Torula will germinate there and cover the rice with a luxuriant growth of cottony filaments, while Yeast-Torula will not of course give rise to the mould. Mucor-Torula is an elliptical or oval cell, generally 0.002-0.003 mm. wide, and twice as long. When fully formed, it shows a round and comparatively large nucleus.

In a wort two or three days old, there are seen myriads of Mucor-Torulæ and of course Bacteria. As a consequence of intramolecular respiration, temperature of the wort commences to rise about the third day and continues high till about the seventh. On the fourth day the wort looks like rice porridge, becomes acid, and contains about 2 per cent. Proof spirit by volume. About the seventh day Bacteria become less numerous than before. The proportion of alcohol has by this time risen to 8 per cent. as Proof Spirit by volume. The proportion of acid has also increased to about 1.5 per cent. (as acetic acid). About the tenth day bubbling of carbon dioxide ceases, and the upper portion of the wort becomes clear. There is dextrin, but generally no sugar; and the dregs at the bottom consist of minute fragments of the cellulose tests of rice. The proportion of alcohol is now at its maximum, usually amounting to about 16 per cent. as Proof spirit by relume

amounting to about 16 per cent. as Proof spirit by volume.

Such is briefly the history of brewing. The diastase enzyme present in cakes brings about saccharification of starch, not only of that present in cakes but also of that of the fresh-boiled rice added to them. At no time there is much maltose in wort, showing almost simultaneous conversion of starch into maltose and the latter into alcohol. I have not followed the line of enquiry into any possible symbiotic action of the *Mucor* species and Bacteria

which are always found together in Bákhar, in cakes, and in wort. Leaving that intricate question aside, we see that the entire process of fermenting rice for spirit is carried on with the help of a Mucor; the vegetative stage being accountable for saccharification of starch, and the reproductive stage under the abnormal condition of immersion in water for the subsequent conversion of sugar into alcohol. The Chinese are also said to use a species of Mucor in fermenting rice for spirit. The Japanese are said to use an

fungi for manufacture of rice spirit.

(4) Yield of spirit.—According to Harmstadt, 100 lbs. of starch yield 35 lbs. of alcohol, or 78 gallons of Proof spirit. ("The Brewer," etc. J. A. Churchill.) Rice contains 78 per cent. of starch. Therefore, 1 maund of 82 lbs. rice may be expected

Aspergillus in the fermentation of rice for saké. It seems that the three Asiatic rice-eating people have taken advantage of mould

to yield 5 gallons of Proof spirit.

We have seen that the average yield of Proof spirit from 82 lbs. of rice at the Cuttack Central Distillery is about 4 gallons. The maximum is obtained in January when it may be as high as 4.5 gallons, and the minimum in October when it may be as low as 3.66 gallons. The following table shows the average yield of Proof spirit, mean temperature, and mean humidity in the different months of the year at Cuttack:—

Mo	nths.		Average of the last three years. (1901-03)	Mean temperature.	Mean humidity
			Gallons.		
January			4 28	72°F.	65
February			4.09	76°F.	63
March		•••	4:01	83°F.	62
April		•••	4 18	88°F.	62
May		•••	4.14	89°F.	65
June		•••	4.00	86°F.	74
July			4.18	83°F.	81
August			3.95	83°F.	81
September		•••	3.87	83°F.	82
October		•••	4.19	81°F.	75
November	***	577	4.19	75°F.	75
December	•••	***	4.18	70°F.	66

[The mean temperature and humidity are taken from Blauford's "Climates and Weather of India" (Macmillan)].

The formation of cakes and wort takes place in thatched sheds open at one side. There is great range of air temperature at Cuttack, the mean highest being 110°F., and the mean lowest 51°F. As the temperature of fermentation in cakes and in worts is not in any way regulated, it is absurd to expect the same yield in every month of the year. The yield, however, does not vary with

the air temperature alone. It varies also with the humidity of

the air, as will be seen from the table.

It will be seen that pretty low temperature and low humidity are favourable for good outturn, while high percentage of moisture in the atmosphere is decidedly unfavourable. There is, however, another potent factor which determines yield. The rice is subject to the attack of weevils, while it is spread out to cake. The loss in weight is not inconsiderable in the hot and moist months when the grains are most attacked. In winter weevils are generally fewer, and in windy days may be almost absent. The loss in weight due to the ravages of weevils has not been estimated; but judging from their number and the nature of attacked

grains, it must be pronounced heavy.

Besides the losses due to defective fermentation and ravages of weevils, a certain proportion of alcohol is always lost with the spent wash. The proportion varies within certain wide limits. Sometimes the distillers stop distillation at an early stage when only about 1th of the wort has been collected as distillate. I am aware that, if distillation be carried on to remove the last drop of alcohol contained in a wort, the spirit becomes very rich in fusel oil and unfit for human consumption. The fact, however, remains that a certain quantity of alcohol is wasted with the spent wash. I distilled small quantities of wort ripe for distillation and also quantities of spent wash, and found that 0.3 to 0.5 gallons of Proof spirit for every 82 lbs. of rice fermented are usually lost. Out of five samples examined I found, in one case, that the spent wash contained only a minute quantity of alcohol. Here are some of the results:—

(1) Wort examined on the 12th day (3rd May 1904) and considered fit for distillation.—A small quantity was distilled, and it showed 11 per cent. Proof spirit. The total volume of the wort formed from 82 lbs. of rice was 26½ gallons. Hence it could yield, if all the alcohol were drawn off, 3 92 gallons Proof spirit. The actual quantity drawn at the distillery was 3 6 gallons Proof spirit. A rough chemical examination of the wash showed the

presence of both sugar and starch in it.

(2) Wort ready to be distilled at the distillery on 10th May 1904.—A small quantity distilled by me on the same day showed 16.5 per cent. Proof spirit, which meant 4.37 gallons Proof spirit. The actual quantity drawn at the distillery was 3.92 gallons Proof spirit. Loss 0.45 gallons. The number of gallons of distillate collected at the distillery was only 5.4 out of 26 gallons of wort, i.e., nearly \(\frac{1}{2}\text{th}\)). Chemical examination of the wash showed presence of starch and dextrin in solution, but no sugar.

(3) Wort ripe for distillation.—Cakes and rice with water put in vat on 11th and 12th May 1904. A small quantity was distilled by me on 25th May 1904, and

showed 4.05 gallons Proof spirit. The actual quantity collected at the distillery was  $5\frac{1}{8}$  gallons out of  $26\frac{1}{2}$  gallons of wort and gave 3.81 gallons Proof spirit.

Hence loss 0.24 gallons Proof spirit.

(4) Spent wash from the distillery.—One hundred and sixty four lbs. of rice (2 maunds) gave 53 gallons of wash. Distilled at the distillery on 24th May 1904. Distillate 6½ gallons 5 U.P., and 5 gallons 47 U.P. Total distillate 11½ gallons = 1, part of the wort. Actual yield 8.83 gallons Proof spirit. For 82 lbs. of rice 4.415 gallons Proof spirit. A very satisfactory yield. A small quantity of the spent wash distilled by me gave only a minute quantity of alcohol.

From results such as these, it appears that if the last trace of alcohol present in a wash were collected, the average yield from 82 lbs. of rice fermented in the usual way would not exceed 4.5

gallons Proof spirit.

There is, however, another factor that determines the total yield of alcohol. It is well known that acid fermentation of wort takes away a portion of available sugar from it and thereby causes some loss of alcohol. I have not had opportunities of comparing the proportion of acid formed in different seasons of the year. Indeed, most of the experiments on which my conclusions are based, were carried out in the two hot months of April and May of this year (1904), when the maximum air temperature, varying between 105°—108° F., was very favourable for acid fermentation. The following figures will, however, show the relation between the proportion of acid and alcohol in wort and spent wash.

1. Wort. Vat charged on 11th and 12th May 1904. Wort examined on 25th May 1904—

(a) Acid (as acetic acid) ...  $2.384^{\circ}$ /<sub>o</sub>

(b) A small quantity of the wort distilled, and the distillate made up with water to original volume—

Acid ... 0.03°/

(c) The wort could yield 4 05 gallons P. S. for 82 lbs. of rice.

2. Wort kept a month in a bottle after it had been pronounced ripe for distillation—

Acid ... 2.68%

3. Wort prepared on 16th May 1904. Examined on the ninth day (25th May 1904) when it was not yet ripe—

Acid ... 1.64°/

4. Spent wash (referred to above) of a wort of which \(\frac{1}{46}\) were drawn, yielding 4415 gallons P.S. on 24th May 1904.

(a) Examined on 25th May 1904—
Acid ... 2.32°/o

	Therefore in the original wort of $26\frac{1}{2}$ gallons—
	Acid 1.816°/,
	(b) The spent wash distilled and the distillate made up
	with water to original volume-
	Acid 0.028°/.
5.	Spirit distilled from wort: age seventh day. Distillate made up with water to the volume of wort—
	(a) Proof spirit 8.75°/ <sub>o</sub> (b) Acid 0.012°/ <sub>o</sub>
6.	Wort ripe for distillation. Distilled and the distillate made up with water to the volume of wort—
	(a) Proof spirit 11°/ (b) Acid 0·024°/°
7.	Wort similar to above. In the distillate—
	(a) Proof spirit 16 5% (b) Acid 0.024%
8.	Spent wash from wort $26\frac{1}{2}$ gallons, of which $5\frac{1}{2}$ gallons had been drawn away containing 3.87 gallons P.S. Spent wash examined on 4th June 1904—
	(a) Acid 2.96°/ (b) Sugar (as dextrorse) 1.25°/ (c) Acid in wort, about 2.34°/
9.	Spent wash from wort which had yielded 4 gallons P.S. Examined two days after—
	(a) Acid $3.9^{\circ}$ (b) Acid in the wort $3.1^{\circ}$
10.	
	(a) Acid 4.81°/ (b) Acid in the wort 3.8°/
aci sta is i	From these results it appears (1) that wort fit for distillation tains from $1\frac{3}{4}$ to $3-4^{\circ}/_{\circ}$ of acid (as acetic acid); (2) that the d fermentation takes place more rapidly during the earlier ges of alcoholic fermentation; (3) that the production of acid ather slow after it has reached a certain limit; (4) that only out $0.024^{\circ}/_{\circ}$ of the acid of the wort is drawn away with the rit even when distillation has been carried on to collect the last

give only about 0.03 or 0.04% of acid to the distillate.

The third inference is of great importance to the distillers, who know from experience that yield of spirit is not perceptibly diminished if distillation of wort is put off for a few days.

portion of alcohol; (5) and that spent wash, if distilled, would

Now, assuming that a ripe wort contains  $l_4^{3\circ}/_{\circ}$  of acid (acetic), and that the production of the acid could be prevented and the

sugar used up could be turned into alcohol, we see that this percentage of acid means a loss of about 0.78 gallons of Proof spirit. In this calculation, 1 lb. of acetic acid has been taken equivalent to 0.76 lb. of alcohol or 0.17 gallons of P.S. One per cent. of acetic acid in  $26\frac{1}{2}$  gallons of wort would therefore roughly mean 2.65 lbs. of acid, or 0.5 gallons of P.S. This gives us an idea of the probable loss of alcohol in wort. Of course the formation of acid does not necessarily mean actual transformation of alcohol into acid. For convenience of estimation the total acid is regarded as acetic acid. We know that there are various kinds of acids formed, some of which are derived directly from rice, that is, its starch and sugar. We see, however, that if the loss as acid could be prevented, and the alcohol collected from spent wash, the average yield of alcohol per 82 lbs. of rice would be about 5 gallons of P.S.

IV. Suggestions.—The study of rice fermentation enables us to suggest a few possible improvements in the method which is followed rather blindly, and to guard against defective fermenta-

tion which is not an unusual occurrence. (i) We have seen how damp air affects caking by vigorous growth of Mucor and of other undesirable organisms drawing from rice their food but giving no return. It appears that the diastase enzyme is formed in cakes when the vegetative growth of the fungus is retarded owing to insufficient moisture. In my experiments I found that vigorous growth did not yield satisfactory result. In plenty of an organic substance, such as rice, in presence of water, Mucor induces putrefactive changes. object of caking being understood, the spores of Mucor are to be given just sufficient moisture to germinate in the rice which is then to dry up slowly in order that the hyphæ may more and more penetrate into the grains in search of moisture. An attempt should therefore be made in wet months to keep the air of caking sheds pretty dry by artificial heating.

(ii) So again rapid drying of cakes in dry months is undesirable. This may be checked (1) by sprinkling water on rice when it is first laid out to cake; and (2) by placing large tubs of water in caking sheds. Perhaps a wet and dry bulb thermometer, hung up in the sheds, will prove a useful adjunct.

(iii) Better outturn of spirit in cold months is due to several causes, the chief of which are low temperature retarding acid fermentation, and comparative absence of weevils. Practically nothing but thorough cleanliness of vats and sheds can prevent putrefaction. The vats should be more carefully washed and fumigated than they are done at present. The caking sheds cannot be kept closed, as absence of plenty of light prevents rapid maturing and carbonization of *Mucor* so essential in successful caking. To check putrefactive change of wort, a more effectual method will perhaps be the introduction of mashing as practised in Europe.

(iv) Thorough cleanliness is also a remedy against attack of weevils. The difficulty of getting rid of the pest is enhanced by

the fact that caking sheds are never free from rice. Perhaps the best remedy is to have two or three caking sheds at considerable

distances from one another and to use them alternately.

(v) The proportion of water added is 20 gallons for every 82 lbs. of malted and unmalted rice, i.e., about 2½ parts of water to one of rice. The researches of Dr. Charles Graham show how temperature, relative proportion of water to malt, of malted and unmalted grain, and time of mashing influence the composition of resulting wort. The results obtained by him may not be true when Mucor ferment is used, especially when there is possibility of symbiotic action between Mucor and Bacteria. Trials with a view to find the best proportion of water to rice can be made only at a distillery.

(vi) Spent wash is at present thrown away and sometimes left in tanks for use as food for cattle. If there is much dextrin (as when the yield of spirit has been low), the spent wash may be diluted with water and yeast or wort added to recover a fresh portion of alcohol for use, say, in making varnish. Or acetous fermentation may be set up for preparation of acetates such as of

iron or copper.

(vii) The primitive form of fireplace in distilleries occasions much waste of fuel. The simple expedient of a grating will considerably prevent this waste, and the waste heat of one fireplace may be utilised to boil wort of an adjacent still producing richer spirit at less cost, or to redistill weak spirit to make it strong.

(viii) As Bákhar is the ferment used, it is necessary to ascertain its quality before use. Sometimes caking is defective on account of bad Bákhar. When such is the case the distillers throw a quantity of Bákhar into their fermenting vats. This introduces Mucor spores and remedies the evil to a certain extent, but the outturn of spirit is always below the normal, since bad malting cannot be cured in this way. From appearance experienced distillers judge of the quality of Bákhar, but sometimes they make mistakes which cannot be found out until too late. It is, therefore, desirable to test the fermenting quality of every fresh batch of Bákhar pills. For this bits of the Bákhar may be powdered and mixed with small quantities of boiled rice. From growth of the fungus the quality of the Bákhar may be easily judged. Or the powdered Bákhar may be kept moist with water for a day or two and then examined under a microscope. There will be enough Mucor spores and hyphæ seen from which the proportion of the ferment spores may be judged. For this a low power microscope will suffice.

While concluding this paper I have great pleasure in acknowledging my indebtedness to Mr. C. C. Mitra, Excise Deputy Collector, and to Mr. A. N. Sen, Superintendent of the Central Distillery, Cuttack, for kindly supplying me with materials used in fermenting rice, and with much valuable information.

I Most of the experiments described in this paper were carried out in 1904. A few relating to Mucor Torulæ were done last year.

20. Silver Dioxide and Silver Peroxynitrate—By E. R. WATSON, B.A. (Cantab.), B.Sc. (Lond.), Offy. Professor of Chemistry, Civil Engineering College, Sibpur.

In 1814 Ritter (Gehlens Neues Journ. 3, p. 561, 1804) obtained a black crystalline substance at the anode during the electrolysis of an aqueous solution of silver nitrate, which he regarded as silver dioxide, Ag, O2. Further investigation of this product, however, showed that it certainly was not pure silver dioxide. It was found always to contain nitrogen. By some investigators it was regarded as silver dioxide which mechanically but persistently retained silver nitrate (Wiedemanns Elektricität, II, p. 509). However, the majority of chemists who examined this product came to the conclusion that it was a definite molecular compound of silver nitrate and some peroxide of silver, and yet the results obtained were singularly inconsistent, and each investigation resulted in the proposal of a new formula for this supposed molecular compound. By Fischer and by Gmelin and Mahla it was regarded as a molecular compound of silver dioxide and silver nitrate with water of crystallisation, but they disagreed as to the formula.

4AgO.AgNO<sub>3</sub>.H<sub>2</sub>O (Fischer in Journ Prakt. Chem., 33, p. 237). 10 AgO. ZAgNO3. H2O (Gmelin and Mahla in Liebigs Ann.

Chem., Leipzig 83, 289).

Berthelot considered the substance as a molecular compound of silver nitrate and a peroxide Ag<sub>2</sub>O<sub>3</sub>, and assigned the formula 4Ag<sub>2</sub>O<sub>3</sub>.2AgNO<sub>3</sub>.H<sub>2</sub>O (Dammer, Anorganische Chemie, II. 2, 771).

Sulc gave to the substance the empirical formula Ag, NO11, and regarded it as a curious molecular compound of silver nitrate, silver dioxide and oxygen AgNO3.3Ag2O2.O2 (Zeitschr. Anorg.

Ohem. 12, 89).

Mulder and Haringa (Rec. Trav. Chim., Leiden, 15, 1., p. 236) agreed with Sûlc as to the empirical formula Ag7NO11 but preferred to regard the substance as a molecular compound of silver dioxide and silver pernitrate, the silver salt of a hypothecal acid, pernitric acid, and they wrote the formula as AgNO<sub>5</sub>.3Ag<sub>2</sub>O<sub>2</sub>.

Tanatar also agreed (Zeitschr. Anorg. Chem., 28, p. 331) that the formula Ag, NO<sub>11</sub> expressed empirically the composition of the compound, but gave the constitutional formula AgNO<sub>8</sub>.2Ag<sub>5</sub>O<sub>4</sub>.

An examination of these records left the mind in considerable doubt as to the nature of this electrolytic product. In the first place, even the empirical formulae proposed exhibit very considerable discrepancies, which suggested that probably the different investigators had not analysed the same substance and that this anodic product might be, not a simple substance, but a mixture and that the proportions of the various components of the mixture were altered by slight changes in the conditions under which the electrolysis was brought about. It must be remembered that this electrolysis of silver nitrate

solution is the only method by which a polyvalent silver compound can be obtained in any quantity. Other methods have been described for the preparation of silver dioxide. Wöhler states that he obtained silver dioxide as a black crust on a silver anode during the electrolysis of dilute sulphuric acid (Liebiys Ann. Chem., Leipzig, 146, p. 263), but the method gives an exceedingly poor yield, and it is difficult to obtain sufficient even for analysis. Schiel has described the preparation of silver dioxide by the action of ozone on normal silver oxide, Ag<sub>2</sub>O (Liebigs Ann. Chem., Leipzig, 132, p. 322); and Berthelot has given reasons for the supposition that an oxide, Ag<sub>4</sub>O<sub>3</sub>, is formed on the addition of alkali to a mixture of hydrogen peroxide and silver nitrate, but has never isolated the compound. But the descriptions of silver peroxide which are to be found in the text-books are all derived from the investigation of the product formed at the anode during the electrolysis of silver nitrate solution (Fischer, loc. cit.; Gmelin and Mahla, loc. cit.; Wallquist in Journ. Prakt. Chem., 31, p. 179; Grotthus, in Gilbert Ann. 61, 1819, p. 60; Böttger Zeitschrift für Chemie 1870, 82 and Berichte 1873, 1396). The whole question of the valency exhibited by silver in its per-compounds appeared, therefore, subject to doubt. It appeared probable that the dioxide of silver, Ag<sub>2</sub>O<sub>2</sub>, had never been obtained, and a whole series of formulae, viz,  $Ag_2O_3$ ,  $Ag_3O_4$ ,  $Ag_4O_3$ ,  $Ag_{10}O_9$ ,  $Ag_{12}O_{11}$ , Ag<sub>10</sub>O<sub>13</sub> and Ag<sub>14</sub>O<sub>17</sub> had equal claim to represent the valency of silver in its per-compounds.

Black powders are obtained at the anode during the electrolysis of aqueous solutions of other soluble silver salts, and these products seem, in many respects, similar to that obtained from silver nitrate. They have been investigated by Mulder and Tanatar, and, apparently, to these substances also, it is necessary to assign

quite complicated formulae.

For the product of the electrolysis of aqueous silver sulphate solution Mulder (Rec. Trav. Chim., Leiden, 18, p. 91; 19. p. 115) proposed the formula  $2Ag_2SO_4.5Ag_2O_2.60$  which must be considered as deriving from the oxide  $Ag_{14}O_{14}$ ; the electrolysis of silver acetate solution gave a product to which he assigned the indefinite formula x ( $Ag_2O_2$ ). y ( $AgO.OC.CH_3$ ) z O.

Tanatar obtained from silver fluoride a substance to which he assigned the formula  $4Ag_3O_4$ .3AgF. deriving from the oxide  $Ag_{80}O_{85}$ . On washing with hot water this was decomposed and

there remained a compound 2Ag<sub>8</sub>O<sub>4</sub>.AgF.

From these considerations I was led to examine in the first place the composition of the product obtained during the electrolysis of aqueous solutions of silver nitrate in order to see whether the product may be regarded as a definite chemical compound, or as a mixture in which the proportion of the constituents varied with the conditions under which the electrolysis was effected. I was at first unable to obtain concordant results, but soon found that this was due to a defect in the method of handling the product. This will not stand washing with warm water or contact with filter-paper or drying in the steam-oven, but if it be washed

by decantation with cold water, and be dried at the ordinary temperature in a desiccator over soda-lime, then perfectly consistent results may be obtained. This was already observed by Sûlc (loc. cit.). I repeated the work of Sûlc, reproducing all the conditions as perfectly as possible, and was able to obtain a product in all respects similar to that described by him. I then varied the conditions of electrolysis, viz., the current-concentration and density and also the solution-strength, and examined a number of products obtained under different conditions. I found that in all cases the product was the same and identical with the compound described by Sûlc and which has been termed by Tanatar 'silver peroxynitrate.' This disposed of the possibility that the product was a mixture and in conjunction with the uniform crystalline appearance of the substance satisfied me that there was produced a definite chemical compound of which the composition could be satisfactorily represented by the empirical formula Ag7NO11. The results of the earlier investigators Fischer, Mahla and Berthelot, and the divergence of their analytical results from those of Sûlc, Mulder and Tanatar must be explained by the supposition that their method of handling the product before analysis had caused its partial decomposition.

Silver peroxynitrate, when heated to a temperature of about 150°, suddenly evolves oxygen, and there is left about 91.5 per cent. of a black residue. Sûle has investigated this reaction carefully and has shown that it may be satisfactorily represented by the equation—

 $2Ag_7NO_{11} = 2AgNO_8 + 6Ag_2O + 5O_8$ 

On the further application of heat, a certain amount of brown fumes are evolved and there is left pure white silver—

$$2AgNO_3 = 2Ag + 2NO_2 + O_2$$
  
 $6Ag_2O = 12Ag + 3O_2$ 

This behaviour, when heated, is of importance when considering the structural formula to be assigned to the compound. It shows that in some way one atom of silver is differentiated from the other six. This is shown both in the formula suggested by Sülc, viz.—

(a)  $AgNO_3$ .  $3Ag_2O_2$ ,  $O_2$ 

and in that ascribed to the compound by Mulder and Haringa, viz.—

(b) AgNO<sub>5</sub>. 3Ag<sub>2</sub>O<sub>2</sub>

To both of these formulæ, however, there seem considerable

objections.

That of Sûlc rests also on the behaviour of the substance when treated with aqueous ammonia (Z. Anorg. Chem., 24, 305), in which reagent it goes into solution with the evolution of nitrogen, but both the analytical data and the argument based thereon seem open to objection. He supposes that it is only the  $Ag_2$   $O_2$  part of

the molecule which reacts with the ammonia according to the equation-

$$3Ag_2O_2 + 2NH_3 = 3Ag_2O + 3H_2O + N_{s*}$$

In the first place this assumes a knowledge of the behaviour of silver dioxide with ammonia—a knowledge which Sûlc had not derived from experience as he had found himself unable to prepare this dioxide of silver; and in the second place it is difficult to imagine what would be, on this hypothesis, the composition of the compound or compounds which remain in solution in the ammonia. I have prepared the pure dioxide of silver and I find that it does not react with ammonia according to the equation—

$$3Ag_2O_2 + 2NH_3 = 3Ag_2O + 3H_2O + N_2$$

I have not been able to confirm Sûlc's analytical figures for the reaction of the peroxynitrate with ammonia, and until the nature of the other products of the reaction has been examined, it appears hazardous to draw any conclusions from this reaction.

According to the formula (b) suggested by Mulder and Haringa, the substance must be regarded as a basic salt, either of Ag<sub>2</sub>O. 6Ag<sub>2</sub>O<sub>2</sub> and the hypothetical acid HNO<sub>5</sub> in which nitrogen is nonovalent, or of Ag<sub>2</sub>O<sub>2</sub> and the hypothetical acid H<sub>2</sub>NO<sub>5</sub> in which nitrogen is octovalent, neither of which appear à priori probable.

Other formulae which might be suggested to elucidate the constitution of this compound are—

This is, to a certain extent, identical with that suggested by Sûlc.

According to this formula the substance is regarded as a basic salt of the hypothetical acid HNO<sub>4</sub> in which nitrogen is heptavalent.

It is important to notice what valency must be assigned to silver according to these different views.

(a)  ${\rm AgNO_3.3Ag_2O_2.O_2}$ ; derives from the oxide  ${\rm Ag_2O,3Ag_2O_2}$ ,  ${\rm O_2~or~Ag_{14}~O_{17}}$ .

(b)  $\overrightarrow{Ag}$ NO<sub>5</sub>,  $3\overrightarrow{Ag}$ 2O<sub>2</sub>, deriving from the oxide  $\overrightarrow{Ag}$ 2O,  $6\overrightarrow{Ag}$ 2O<sub>2</sub> =  $\overrightarrow{Ag}$ 11O<sub>13</sub> or from  $\overrightarrow{Ag}$ 2O<sub>2</sub>.

(c) Similar in this respect to (a) deriving from  $Ag_{14}O_{17}$ . (d) Deriving from the oxide  $Ag_{14}O_{15}$ .

It must be regarded as an  $\hat{a}$  priori objection that it is necessary to assume that the compound derives from such complicated oxides as  $\text{Ag}_{14}\text{O}_{15}$  or  $\text{Ag}_{14}\text{O}_{15}$  or  $\text{Ag}_{14}\text{O}_{17}$ . This  $\hat{a}$  priori objection would not apply to the formula  $7\text{Ag}_2\text{O}_2, N_2\text{O}_7 = \text{Ag}_{14}\text{N}_2\text{O}_{21}$ , which is somewhat similar to the formula  $\text{Ag}_7\text{NO}_{11}$  hitherto assigned. However, an examination of the analytical results, both

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[N.S.]of Sûlc and of my own work, leave no doubt that the substance must be represented as Ag7NO11 and not by the more tempting

formula Ag14N2O21.

I have examined the behaviour of the electrolytic product when treated with water. Even at the ordinary temperature of the laboratory (27° to 32° C) a reaction slowly occurs with the evolution of oxygen. This reaction occurs more readily on boiling, and is complete in less than an hour. Oxygen is evolved, part of the silver goes into solution and there remains a black substance which I have examined carefully and which is pure silver dioxide  $Ag_2O_2$  probably obtained pure for the first time. The course of the reaction is represented by the equation-

$$Ag_7NO_{11} = AgNO_8 + 3Ag_2O_3 + O_2$$

The dioxide of silver.—The insoluble substance which remains after long boiling with water of the peroxynitrate is undoubtedly pure silver dioxide, Ag2O2. This is shown by-

(1) the percentage of silver which it contains;

(2) the fact that on heating, oxygen only is evolved and that in amount required by the dioxide, Ag2O2, and there remains behind pure silver;

(3) the fact that on treatment with warm dilute sulphuric acid, the substance dissolves with the evolution of the amount of

oxygen required by the equation-

$$2Ag_2O_2 + 2H_2SO_4 = 2Ag_2SO_4 + 2H_2O + O_2.$$

It is a greyish-black powder of Sp. G. 7.44 approx. which may be heated to 100° C without change. At a higher temperature it evolves oxygen and leaves silver.

The behaviour of the dioxide with ammonia is most curious. It dissolves in this reagent with the evolution of nitrogen, but in

amount required by the equation-

$$_{6Ag_{2}O_{2}}^{1} + _{2NH_{8}} = N_{2} + _{3H_{2}O} + _{3Ag_{4}O_{3}}^{2}$$

and not, as would have been expected, in accordance with the equation-

 $3Ag_2O_2 + 2NH_8 = N_2 + 3H_2O + 3Ag_2O.$ 

It would be desirable to investigate the nature of the product

which goes into solution in the ammonia.

Soluble silver per-salts.—Both the peroxynitrate and the dioxide of silver, also the peroxysulphate produced by the electrolysis of aqueous silver sulphate solution, dissolve in cold, strong nitric acid with the production of a most intense brown-colored solution, and in cold, strong sulphuric acid with an olive-green color. No doubt these colors are due to the formation of silver per-salts. There seems no doubt that the same salts are formed from the peroxynitrate as from the dioxide, as the colors and absorption spectra of the solutions obtained from the two substances are identical.

These colored salts gradually decompose at the ordinary temperature and more quickly on heating or on adding water, and there remain in solution just the ordinary colorless silver salts, viz., silver nitrate from the nitric acid solution and silver sulphate from the sulphuric acid solution. Up to the present, attempts to isolate these per-salts have been uniformly unsuccessful. During the decomposition of these solutions a certain amount of gas evolution occurs. This gas is no doubt oxygen. There is not formed any hydrogen peroxide during the decomposition. An attempt was made to study the rate of decomposition of the nitric acid solution by measuring the depth of color of the solution from time to time. It appears that the rate of decomposition of the colored compound is proportional to the concentration of this substance in the solution. Expressed in symbols

$$\frac{\mathrm{dx}}{\mathrm{dt}} = \mathrm{kx}.$$

where x = concentration of the colored compound in the solution

t = time k = a constant  $t = A lg^a x + B$ 

where A and B are constants.

These observations are not in agreement with the supposition that the colored compound has the simple formula  $Ag(NO_8)_2$  which would naturally be first assigned to it. The formula  $[Ag(NO_8)_2]_4$  or  $Ag_4(NO_8)_8$  satisfies the requirement that the substance shall decompose according to a unimolecular reaction viz.—

$$Ag_4(NO_8)_8 + 2H_2O = 4AgNO_8 + 4HNO_8 + O_2$$
.

This requirement is also satisfied by  $Ag_2(NO_4)_2$  decomposing thus:—

 $Ag_2(NO_4)_2 = 2AgNO_8 + O_2.$ 

The question of the constitution of the soluble colored compound is, however, still under investigation.

#### EXPERIMENTAL.

Preparation of Silver peroxynitrate by electrolysis of aqueous silver nitrate solution.—In Expt. I, the silver nitrate solution was contained in a platinum dish surrounded by ice and water. The dish served as the kathode, whilst the anode was a square piece of platinum foil. In Expts. II, III and IV when stronger currents were employed, the peroxynitrate at the anode and the silver at the kathode formed in needles which grew to a great length, and it was necessary to use a porous cell to separate the products of the two electrodes. The silver nitrate was contained in a small beaker

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[N.S.]

surrounded by ice and water, and the electrodes were rectangular pieces of platinum foil 4cm. × 2cm. the kathode being surrounded by a porous cell. In Expt. I, the current was continued for two hours. In Expts. II, III and IV only for half an hour. In all cases the anodic product easily separated from the platinum foil, and was washed with cold distilled water by decantation and dried at the ordinary temperature over soda-lime in a desiccator.

The various samples of silver peroxynitrate were all analysed in the same way. A weighed quantity was heated very gently in a small round flask until the first stormy gas evolution occurred. The operation was performed in a flask because in a crucible it was difficult to avoid loss when the sudden gas-evolution occurred. The black residue was, after weighing, transferred as completely The black residue was, after weighing, transferred as completely as possible to a porcelain crucible and gently heated until it turned completely white, i.e., was reduced completely to metallic silver.

Sample I.—0,3133 gms. gave 0.2861, gms. residue after gentle ignition, and 0.2499 gms. silver.

Sample II. -0.4772 gms. gave 0.4368 gms. residue after gentle

ignition, and 0.3801 gms. silver.

Sample III.—0.4365 gms. gave 0.3989 gms. residue after gentle

ignition and 0.3472 gms. silver. Sample IV.—(a) 0.4915 gms. gave 0.4507 gms. residue after

gentle ignition, and 0·3931 gms. silver.

(b) 0·4364 gms. gave 0·4009 gms. residue after gentle ignition, and 0·3497 gms. silver.

Expt. No.	Percentage strength of AgNO <sub>3</sub> solution.	Current strength ampères.	Current density ampères per sq. cm.	Per cent. residue after gentle igni- tion.	Per cent.
I II III IV	15 15 15 5	0.03 0.55 1.12 0.55	0·015 0·07 0·14 0·07	91.35 91.54 91.40 (a) 91.70 (b) 91.88	79.78 79.66 79.68 79.98 80.18
	1	AgaN	Oll requires	91.56	79.91

These figures show clearly that the composition of the anodic product is independent of the concentration of the silver nitrate solution and of the strength and density of the current. The product was, in all cases, uniformly crystalline in octahedra: in I the crystals were separate or in small irregular aggregates. In II, III and IV, the octahedral crystals were regularly arranged into needle-like aggregates. It therefore appears that the product is not a mixture but a definite chemical compound.

Action of boiling water on silver peroxynitrate.-For this and subsequent experiments, the peroxynitrate was prepared as in Expt. III in the previous paragraph. With one cell, about 1.8 gms. could be prepared in one operation of 30 minutes. A weighed quantity of the substance was boiled with excess of distilled water in a beaker for  $1\frac{1}{2}$  hours, the water being replaced as required. The insoluble portion was filtered off, washed with hot distilled water, dissolved in hot dilute nitric acid, and the silver in this solution estimated by precipitating and weighing as silver chloride.

The silver in the filtrate was also estimated in the same way. 0.6557 gms. gave 0.5968 gms. silver chloride from the insoluble

residue: insol. Ag = 68.50 per cent.

0.6842 gms. gave 0.6186 gms. silver chloride from the insoluble residue; and 0.1015 gms. silver chloride from the filtrate; insol. Ag = 68.05 per cent.; soluble Ag = 11.17 per cent.

 $Ag_7NO_{11}$  requires insol. Ag = 68.49; soluble Ag = 11.42 per

cent.

In another experiment, the gas evolved during the reaction was collected and was recognised as pure oxygen from the fact that it was completely absorbed by alkaline pyrogallol solution. For collecting the gas the following apparatus was employed:-A flask of about 300 cc. capacity was fitted with a two-holed cork. In the one hole was fitted a delivery-tube with a stop-cock, and in the other a dropping-funnel with a short, wide delivering-tube. The flask was half-filled with distilled water, and boiled vigorously to dispel all air from the flask and water. The flame was then withdrawn from the flask and at the same time the stop-cock on the delivery tube was closed. A quantity of the peroxynitrate was then carefully introduced into the flask through the droppingfunnel, having been first carefully covered with water to prevent the introduction of air into the flask at the same time. The flask was then again heated, the stop-cock on the delivery-tube opened, and the oxygen, liberated from the reaction, was collected over

The dioxide of silver, Ag2O2.—The insoluble residue, which remains after prolonged boiling of the peroxynitrate with water, is pure silver dioxide, Ag<sub>2</sub>O<sub>2</sub>. It is washed by decantation with hot water and may be dried either at the ordinary temperature over soda-lime in a desiccator or in the steam-oven. It is a dull or greyish-black powder. Two determinations of the specific gravity, with about 2 gms. of the substance in a specific gravity bottle, gave 7.46 and 7.42 respectively. The value may therefore be taken as approximately 7.44. On heating, the substance quietly decomposes with the evolution of oxygen, and metallic silver remains,  $Ag_9O_2 = 2Ag + O_2$ .

The percentage of silver in the compound has been determined by heating a weighed quantity and weighing the residual

Sample I.—0.7447 gms. gave 0.6475 gms. residual Ag : Ag = 86.94 per cent.

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Sample II.—0.3612 gms. gave 0.3138 gms. residual Ag: Ag = 86.88 per cent.

The percentage of silver in the second sample was also determined by dissolving in warm dilute nitric acid, precipitating and weighing as silver chloride.

0.3663 gms. gave 0.4232 gms. Ag Cl: Ag = 86.94 per cent.

Ag<sub>2</sub>O<sub>2</sub> requires Ag=87·11 per cent.

The total oxygen in the compound has been determined by heating in a combustion tube in a current of carbon dioxide, and collecting the liberated gas over strong aqueous potash. This gas was recognised as oxygen from its complete absorption by alkaline pyrogallol solution.

0.0842 gms. gave 8.8 cc oxygen at 27° C and 757.5 mm. pres-

sure: 0 = 13.07 per cent.

 $Ag_2O_2$  requires O = 12.89 per cent.

The solution of silver dioxide in hot dilute sulphuric acid.—The dioxide dissolves readily with the liberation of oxygen in accordance with the equation—

$$2Ag_2O_2 + 2H_2SO_4 = 2Ag_2SO_4 + 2H_2O + O_2.$$

The estimation of the oxygen evolved was carried out in the apparatus previously used for examining the gas evolved on boiling the silver peroxynitrate with water. The flask was half-filled with dilute sulphuric acid and boiled until all air was expelled. The flame was then withdrawn from the flask, the stop-cock on the delivery-tube closed, and a weighed quantity of the dioxide introduced through the dropping-funnel. The flask was then again heated, the delivery-tube stop-cock reopened, and the oxygen collected over water. That this gas was oxygen was shown by its solution in alkaline pyrogallol solution.

0.2745 gms. gave 13.7 cc oxygen at 26° C and 757.5 mm. pres-

sure: O = 6.30 per cent.

1 atom of oxygen in  $Ag_2O_2 = 6.45$  per cent.

The solution of silver dioxide in aqueous ammonia solution.—
The oxide dissolves with the formation of a colorless solution and the liberation of nitrogen. The nitrogen liberated in this reaction was estimated in an apparatus similar in principle to that described by Sûlc (Zeitschr. Anorg. Chem., 24, p. 305). The substance was placed in a flask fitted with delivery-tube and a dropping-funnel, with delivering-tube reaching to the bottom of the flask and ending in a capillary. The whole apparatus was completey filled with water and then strong aqueous ammonia was gradually introduced from the dropping-funnel. The nitrogen liberated was collected over water. At the end of the reaction, any gas remaining in the apparatus was driven out by water. The solution was effected at the ordinary temperature.

0.4158 gms. gave 7.3 cc nitrogen at 28° C and 762.5 mm. pres-

sure; N=1.92 per cent.

0.4255 gms. gave 7.4 cc nitrogen at 28° C and 762.5 mm. pressure; N=1.91 per cent.

 $0.5770~\mathrm{gms.}$  gave  $10.1~\mathrm{cc}$  nitrogen at  $28^{\mathrm{o}}$  C and  $762.5~\mathrm{mm.}$ 

pressure; N = 1.92 per cent.

These figures indicate that only one quarter of the oxygen contained in the dioxide reacts with ammonia with the formation of water and nitrogen, according to the equation—

$$6Ag_2O_2 + 2NH_3 = 3Ag_4O_3 + 3H_2O + N_2$$
.

and then the  ${\rm Ag_4O_3}$  reacts with a further quantity of ammonia without the liberation of any gas to produce a soluble compound, perhaps of the form in  ${\rm Ag_4O_3}$  in  ${\rm NH_3}$ .

According to this equation, Ag2O2 would cause the evolution

of 1.88 per cent. of nitrogen.

It is usually stated in the text-books that silver dioxide reacts with ammonia according to the equation—

$$3Ag_2O_2 + 2NH_3 = 3Ag_2O + 3H_2O + N_2.$$

This, apparently, is based on the investigation of silver peroxy-

nitrate by Böttger (loc. cit.).

It would be desirable to investigate the soluble compound formed in this reaction, as it appears that in this compound also the silver must exhibit a valency greater than unity.

The solution of silver dioxide in strong nitric acid.—The dioxide dissolves in cold, strong nitric acid with the production of an in-

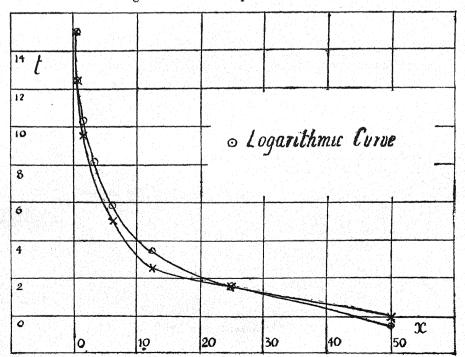
tense brown-colored solution.

The absorption spectrum shows continuous absorption in all parts of the spectrum except in the red of smaller wavelength, the yellow and the green. The color of the solution is colder than that of iodine in alcohol or of ammonio-citrate of iron in water, and appears to be best matched by an oxidised solution of alkaline pyrogallol. 0.1 gm. of the oxide gave a very dark, almost opaque color to 10 cc of strong nitric acid. The substance could not be precipitated by either alcohol or ether, as both these substances immediately destroyed the color of the solution. With dilute nitric acid the color of the solution obtained was never very intense, showing that only a trace of the colored compound was formed under these conditions. The color of the solution gradually fades on standing even at the ordinary temperature (27°-30°C), and much more quickly on warming. The color disappeared at least 3,000 to 4,000 times more rapidly at 100° C than at the ordinary temperature. On the first addition of concentrated nitric acid to the peroxide, there is considerable gas evolution, and during the fading of the color of the solution there is a very slight evolution of gas. The fading of the color was accelerated when the free surface of the solution was increased. For this reason the attempt to isolate the substance by rapidly evaporating the solution over soda-lime in a vacuum at the ordinary temperature was unsuccessful.

The rate at which the colored compound decomposed was studied by keeping a test-tube containing the solution surrounded by a beaker of water to keep the temperature steady, and noting the time when the color appeared equal in intensity to that of one of a series of standard solutions of ammonio-citrate of iron contained in similar test-tubes. There was some difficulty in that the ammonio-citrate of iron solutions had a warmer brown color than that of the solution under investigation. One set of observations is given in the following table:—

Time (t) (mins.).	Concentration of ammonio- oitrate of iron match (x) (gms. per litre).
0.0	50
1.5	25
2.5	12.5
5.0	6.25
8.0	3.12
9.5	1.56
12.5	0.78
15.0	0.39

Temp. 31° C. Strength of nitric acid Sp. G. 1·357 at 85° F.



The curve (diagram) is plotted from this table, and for comparison there is also drawn the logarithmic curve

$$t = A \lg_{e} x + B$$
.

A and B having been chosen so that the two curves shall be coincident at t=1.5 mins, and t=12.5 mins, respectively.

The agreement is fairly good. The curves

$$t = \frac{A}{x} + B.$$

$$t = \frac{A}{x^2} + B.$$

$$t = \frac{A}{x^3} + B.$$

all give much worse agreement.

This result is not in accordance with the simple supposition that the colored compound is  $Ag(NO_3)_2$  but could be explained by the supposition that this salt has the formula  $Ag_4(NO_3)_3$  and decomposes according to the equation—

$$Ag_4(NO_3)_8 + 2H_2O = 4AgNO_8 + 4HNO_3 + O_2$$

The formula Ag<sub>2</sub>(NO<sub>4</sub>)<sub>2</sub> is also possible—

$$Ag_2(NO_4)_2 = 2AgNO_8 + O_2.$$

A similar brown-colored solution was also obtained by the addition of strong nitric acid to the peroxynitrate; also from the peroxysulphate obtained by the electrolysis of aqueous silver sulphate solution, and from the black crust obtained in small quantity by the electrolysis of dilute sulphuric acid solution with silver anode (Wöhler. Liebig's Ann. Chem., 146, 263). In cold, strong sulphuric acid, these substances dissolve to produce an olive-green solution. The absorption spectrum of this solution is very similar to that of the nitric acid solution, except that a little more of the red end of the spectrum is absorbed and less of the green.

21. Note on the SIKANDAR NAMA of NIZAMI. By LIEUT.-Col. D. C. Phillott, Secretary to the Board of Examiners.

In the story  $^1$  of Alexander going on a secret embassy to  $Naush\bar{a}ba$  occur the lines:—

# چو در طاس لغز ذده ۱ افقاد صور .. رهاندده را چاره باید نه زور

It seems to have escaped translators that by the expression, "slippery cup" the author refers to the pit of the ant lion. (One ant lion with three saliva glands of the sheep given daily to a falcon in a fold of meat, is supposed by Turkish falconers to be a remedy for slow moulting.)

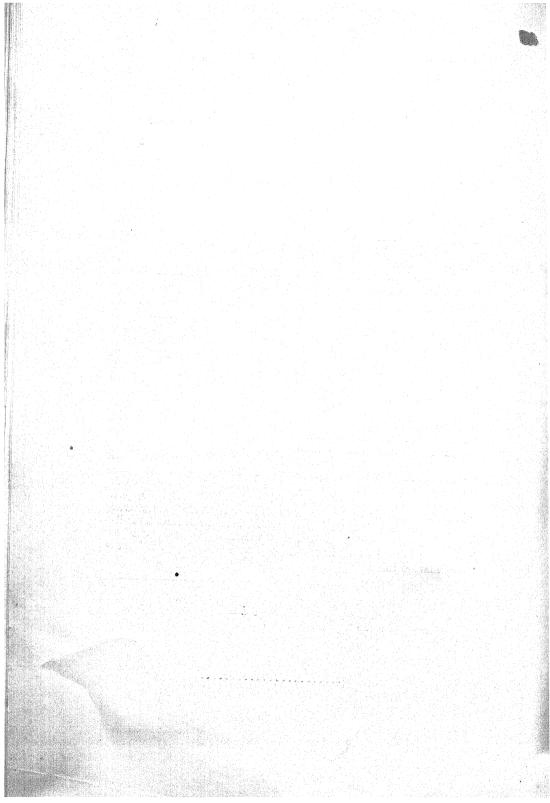
I am indebted to Dr. Annandale, Deputy Superintendent of the Indian Museum, for the following note on the ant lion:—

"Ant lions are the young of a group of insects (Myrneleonides), "which somewhat resemble dragon flies in appearance but have con-"spicuous, clubbed antennae and relatively larger and more dia-"phanous wings. They are common in all sandy localities in the "East, and a considerable number of specimens of two kinds were "brought from Sistān by the collector attached to the recent arbitra-"tion commission. The pitfall of the ant lion is made in the follow-"ing way: Moving backwards, as it always does, the insect digs a "circular furrow with its body. The sand thus excavated is placed "on the large flattened head by means of the legs and is jerked out "of the way. Other concentric furrows are then made in a similar "manner, within the first, until a conical depression has been formed "and the ant lion buries itself at the bottom, only its formidable "toothed mandibles remaining exposed. When an ant or other "insect strays over the edge of the pit the loose sand slips away un-"der its feet, and the ant lion further increases its difficulties by jerk-"ing loose sand at it, until it sinks and is devoured. After living "in this way for a certain period, the ant lion spins a cocoon of silk, "with which it incorporates grains of sand, and pupates at the bot-"tom of its pit, whence it issues in due course as a winged and sexu-"ally mature insect."

<sup>1</sup> Line 3, page 75, Bombay litho. edition, dated A.H. 1265.

<sup>2</sup> In some Indian editions the reading is some

<sup>3</sup> Modern Persians call the ant lion shir-i mur.



# MAY, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 2nd May, 1906, at 9-15 P.M.

The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., Vice-President, in the chair.

The following members were present:-

Dr. A. S. Allan, The Hon. Mr. C. G. H. Allen, Dr. N. Annandale, Mr. B. L. Chaudhuri, Babu Girindra Nath Dutt, Mr. L. L. Fermor, Dr. W. C. Hossack, Mr. T. H. D. La Touche, Dr. H. H. Mann, Major F. P. Maynard, I.M.S., Lieut.-Col. D. C. Phillott, Mr. G. E. Pilgrim, Rai Bahadur Ram Brahma Sanyal, Pandit Yogesa Chandra Sastree-Sankhyaratna-Vedatirtha, Dr. C. Schulten, Mr. R. R. Simpson, Mahamahopadhyaya Satis Chandra Vidyabhusana, Mr. E. H. Walsh.

Visitors:—Mr. W. Bussenius, Dr. J. N. Cook, Major F. C. Hughes, I.A., Captain R. E. Lloyd, I.M.S., Dr. F. Pearse, and

others.

The minutes of the last meeting were read and confirmed.

Twenty-six presentations were announced.

The General Secretary reported the death of Mahamahopadhyaya Mahes Chandra Nyayaratna, an Ordinary Member of the Society.

The General Secretary read a letter from the Right Hon. Baron Curzon of Kedleston, expressing his thanks for being elected an Honorary Member of the Society.

The Chairman announced the following appointments:-

1. Mr. R. Burn, Numismatic Secretary during the absence of Mr. H. Nelson Wright.

2. Mahamahopadhyaya Haraprasad Shastri, temporarily appointed to officiate as Philological Secretary during the absence of Dr. E. D. Ross.

3. Mr. J. A. Chapman, Treasurer, vice The Hon. Mr. Justice Ashutosh Mukhopadhyaya, resigned.

The proposal to create a Medical Section in the Society, of which intimation had already been sent to resident members in accordance with Rule 64A, was brought up for discussion.

Mr. E. B. Howell, I.C.S., proposed by Mr. R. Burn, seconded by Lieut.-Col. D. C. Phillott; Raja Prabhat Chandra Baruah, proposed by the Hon. Mr. Justice Asutosh Mukhopadhyaya, seconded by Pandit Yogesa Chandra Sastree-Sankhyaratna-Vedatirtha; Maulavi Sakhawat Husain, proposed by Shams-ul-Ulama Maulavi Mahammad Shibli Nomani, seconded by Nawab Ali. Husain Khan; were ballotted for and elected Ordinary Members.

Capt. R. E. Lloyd exhibited specimens of Bathynomus giganteus; Aulastomomorpha phosphorops and a new species of the same genus; two new deep-sea Skates; a gigantic deep-sea Holothurian, and a large specimen of Spongodes with commensal Crustacea, all dredged by the R.I.M. Survey Ship, "Investigator."

The following papers were read:-

. Some Persian Riddles collected from Dervishes in the South of Persia.—By Lieut-Col. D. C. Phillot, Secretary to the Board of Examiners.

This paper has been published in the Journal and Proceedings

for April, 1906.

2. The Proportion between Sexes in Helopeltis theivora, Waterhouse.—By H. H. Mann, D.Sc.

3. Preliminary note on the Rats of Calcutta.—By W. C.

Hossack, M.D.

4 Notes on the Freshwater Fauna of India. No. V.—Some Animals found associated with Spongilla carteri in Galcutta.—By N. Annandale. No. VI.—The Life-History of an Aquatic Weevil.—By N. Annandale, and C. A. Paiva. No. VII.—A new Goby from Fresh and Brackish Water in Lower Bengal.—By N. Annandale.

5. Elements of the Grammar of the Kanawar Language explained in English with English illustrations.—By PANDIT TIKA

RAM JOSHI. Communicated by the Philological Secretary.

This paper will be published as a special number of the Journal and Proceedings.

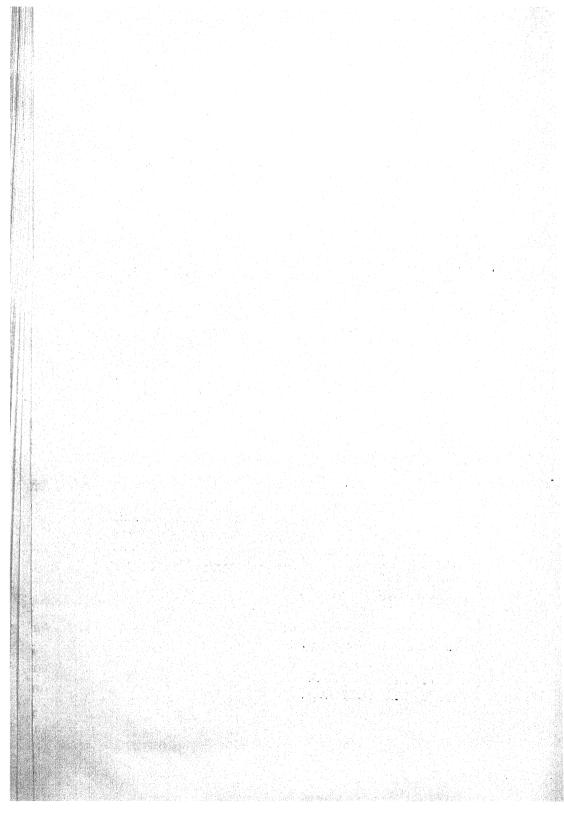
6. The Coinage of Tibet.—By E. H. WALSH, I.C.S.

This paper will be published in a subsequent issue of the Journal and Proceedings.

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### ZOOLOGY.

- Annandale, N.—Notes on the Freshwater Fauna of India. No. V.—Some animals found associated with Spongilla carteri in Calcutta. Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 187-196.
- Chætogaster spongillæ, sp. nov., diagnosis of. N. Annandale, Calcutta, Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 188-190.
- Chironomus sp. (larva), habits of. N. Annandale, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 190-193.
- Tanypus, sp. (larva), habits of. N. Annandale, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 193-194.
- Sisyra, sp. (larva), habits of. N. Annandale, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 194-196.
- Annandale, N., and Paiva, C. A.—Notes on the Freshwater Fauna of India. No. VI.—The life-history of an Aquatic Weevil. Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 197-200.
- Aquatic Weevil, description and habit of. N. Annandale, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 197-200.
- Annandale, N.—Notes on the Freshwater Fauna of India, No. VII.—A new Goby from Fresh and Brackish water in Lower Bengal. Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 201-202.
- Gobius alcockii, sp. nov., diagnosis of, N. Annandale, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, p. 201.
- Hossack, W. C.—Preliminary Notes on the Rats of Calcutta. Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 183-186.
- Key to Rats of Calcutta.
  - A. Long-tailed Rats.
    - (1) Mus rattus alexandrinus.
  - B. Short or Medium-tailed.
    - (2) Mus decumanus.
    - (3) Nesokia bengalensis.
    - (4) Nesokia nemorivaga.



#### LIBRARY.

The following new books have been added to the Library during April, 1906:—

CO-OPERATIVE CREDIT SOCIETIES, U.P. Annual Report on the working of the Co-operative Credit Societies Act—X of 1904—for the year 1904–05. Allahabad, 1905. Fcp.

Presd. by the Govt. of United Provinces.

Benares.—Nagaripracharini Sabha. Proceedings of a public meeting, held on the 29th December, 1905...to discuss the question of a common character for Indian vernaculars.

Benares, 1906. 8°.

Presd. by the Sabha.

Bombay.—Plague Research Laboratory. Report of the Plague Research Laboratory for the official year ending 31st March, 1905. By Lieut.-Col. W. B. Bannerman. Bombay, 1906. Fcp.

Presd. by Lt.-Col. W. B. Bannerman.

Chaudhuri, B. L. Elie Metchnikoff and his studies on human nature. [Calcutta, 1905.] 8°.

Reprinted from the Calcutta Journal of Medicine, 1905.

Presd. by the Author.

Gait, E. A. A History of Assam. Calcutta, 1906. 8°.

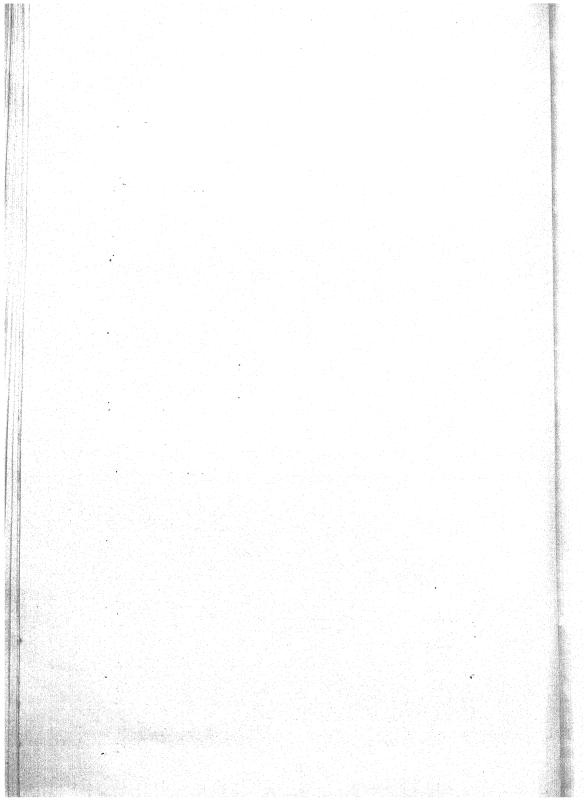
Presd. by the Author.

Haeckel, Ernst. Last Words on Evolution. A popular retrospect and summary...Translated from the second edition by J. McCabe. With portrait and...plates. London, 1906. 8°.

Presd. by the Author.

Jervis, Major T. B. Geographical and Statistical Memoir of the Konkun. The revenue and land tenures of the Western part of India, etc. Calcutta, 1840. 8°.

Reprinted from the Journal of the Bombay Geographical Society, 1840.



- Jervis, W. P. Thomas Best Jervis...As Christian soldier, geographer and friend of India, 1796–1857. A centenary tribute, etc. London, 1898. 8°.
- Jong, A. W. K. de. Het Alkaloidgehalte van Cocablad. [Batavia, 1906.] 8°.

Presd. by the Botanic Institute of Butenzory.

KODAIKANAL OBSERVATORY.—Madras. Bulletin. No. IV. [Madras, 1906.] 4°.

Presd. by the Govt. of Madras.

McGregor, Richard C., and Worcester, Dean C. A Hand-List of the birds of the Philippine Islands. Manila, 1906. 8°.

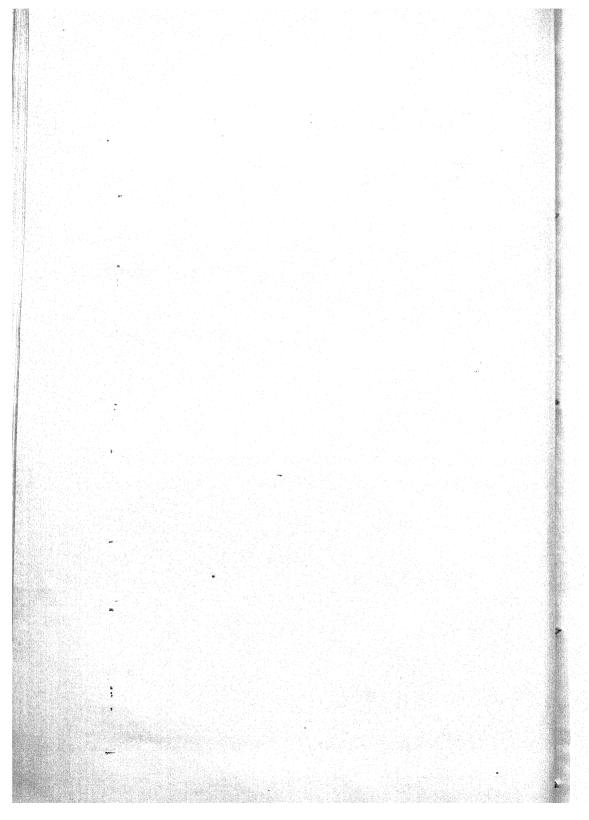
Publications of the Bureau of Govt. Laboratories, No. 36.

Presd. by the Bureau of Govt. Laboratories, Manila.

Young, Alfred H. Studies in Anatomy from the Anatomica Department of the University of Manchester. Vol. III. Edited by A. H. Young. *Manchester*, 1906. 8°.

Publications of the University of Manchester, Anatomical Series, No. I.

Presd. by the University of Manchester.



22, Sanskrit Literature in Bengal during the Sena rule.—By Monmohan Chakravarti, M.A., B.L., M.R.A.S.

Under the last three Sena kings the study of Sanskrit in

The Augustan Period of Sanskrit in Bengal. Bengal received a great impulse. The political and literary history of the period is little known and less understood. But some of the main causes may be dimly

guessed at.

During the eleventh and twelfth centuries a general revival

Causes.
1. The Age: A general Revival of Sanskrit in Hindu-

of Sanskrit learning is noticeable in Hindustan. The courts of Kāsmir, Kanauj, Cedi and Dhārā were influential centres of scholars and Brahminical schools. Mithilā and Kalinga courts were also not much behind them. Pandits and their

students travelled in numbers from one court to another, from one tol to the other. All this encouraged the study of Sanskrit in Bengal, where it had been not much attended to up to that time, presumably on account of Buddhistic influences.

Furthermore, the different parts of Bengal, such as Suhma,

2. The taste and the liberality of the later Sena kings. Vanga, Vārendra and Rāḍha were united under one rule by Vijayasena and his two successors. The union of so many fertile tracts added wealth and splendour to the Bengal courts and permitted liberal

endowments and gifts on the part of their kings. The available references, though very scanty, sufficiently indicate the taste and the liberality of the later Sena kings. Ballālasena, Lakṣmaṇasena, Keṣavaṣena, and Mādhavaṣena (probably of the royal family) themselves composed verses and compiled other works with the help of court paṇḍits. Of Lakṣmaṇaṣena's liberality the Taba-kāt-i-Nāṣirī recorded:—"The least gift he used to bestow was a lak of kaurīṣ." (Raverty's translation, p. 556.) The poet Dhoyīka speaks of having received gifts of elephants and goldenhandled fly-whiskers (the Pavaṇa-dūtam, verse 101). The Sena kings called themselves Purama-vaīṣṇava; and, probably, it might have been a part of their policy to encourage Brāhmaṇas and Sanskrit studies in contradistinction to the Buddhistic tendency of their neighbours the Pāla kings.

In consequence a band of Sanskrit writers flourished in the latter part of the Sena rule. Many tols also seem to have been established in, and near Nūdiah, the capital. To these tols may be reasonably traced the origin of the well-known Navadvīp school, which has survived to this day and which produced in the 15th and 16th centuries a remarkable group of Naiyāyikas and Smṛti writers. In the Sena period, however, the authors confined themselves chiefly to rituals and poetry, the two sub-

jects in which the kings took special interest.

I now add a few remarks on these writers, taking them alphabetically:-

#### (I) ANIRUDDHA.

Guru of Ballālasena. The king compiled the dānasāgara at his instance. Said to have been famous in Vārendra land.¹ None of his works has yet been discovered. But that he composed works on rituals is inferrable from the statement of Gopāla Bhatṭa, the disciple of Caitanya. In the Sat-kriyāsāra-dīpaka, a ritual work for Vaiṣṇavas, Gopāla Bhaṭṭa says that he compiled it after consulting the works of Aniruddha, Bhīma Bhaṭṭa, Govindānanda, Nārāyaṇa Bhaṭṭa, Bhavadeva and others.² Mittra's "Notices" mention two ritual works of one Mahāmahopādhyāya Aniruddha Bhaṭṭa, viz., the Çuddhi-viveka (No. 299, II, 338) and the Hāralatā (No. 1001, II, 372). Aniruddha and the Hāralatā have been referred in the Suddhi-Kaumudī of Govindānanda Kavikankanācāryya of the second quarter of the 16th century (Bibl. Ed., pp. 132; 30, 31, 33, 52, 87).

ेवदार्थस्यतिसंग्रहादिपुरुषः स्नाच्यो वरेन्द्रीतले निक्तन्त्रोञ्चलवीचिनाप्रनयनः सारपूतं ब्रह्माणः । (?) घट्कम्मा भवदार्थप्रीकिनिलयः प्रख्यातसत्यव्रतो ख्वारेरिव गीव्यतिनेरपतेरस्थानिरुद्धो गुरुः ॥ [६॥] खाध्यातसक्तलपुरागस्यतिसारः श्रद्धया गुरोरसात् । किलक्ष्ममोवदानं (?) दाननिबन्धृ विधाकामिष ॥ [०॥]

The Dānasāgara, H. P. Šāstri's "Notices," second series, Vol. I., p. 170.

श्रीमद्गोपालभट्टोऽयं साधुनामाज्ञ्या स्ट्राम् ।

भगवडमीरज्ञार्थं भक्तानां वैदिकी तु या॥ [३॥]

छता याप्यनिरुद्धेन भीमभट्टेन या छता ।

श्रीमद्गोविन्दानन्देन कम्मियां पद्धतिः ज्ञता ॥[॥]

श्रीनारायग्रभट्टेन कम्मेठायान्तु वैदिकी ।

भट्टश्रीभवदेवेन छन्दोग्रानान्तु या छता ॥ [॥॥]

The Sat-kriyā-sāra-dīpikā, "Notices," second series, I. 397.

#### (II) ISANA.

Elder brother of Halāyudha. No MS. of his work has as yet come to light. But Halāyudha in his introduction to the Brāhmaṇa-sarvvasva says that Isāna wrote a Paddhati or manual on rites relating to the āhṇikas of Brāhmaṇas.

#### (III) UDAYANA.

Mentioned by Govardhan-ācārya in the Āryā-sapta-ŝatī, as

Udayana, the poet-pupil of Govardhana.

When the Udayana and Balabhadra śiṣya-sodarābhyām, which may mean twin-pupils of his or pupils who are brothers. Is he identical with the Udayana who composed the prasasti of Meghesvara temple, Bhuvanesvara, Orissa? The time of the inscription falls in the last decade of the twelfth century, which is the probable time of Govardhana's pupil.

#### (IV) UMĀPATI OR UMĀPATIDHARA.

The only complete piece of his as yet known is the praisasti in the Deopara inscription of Vijayasena (Ep. Ind. I. 307-311). Stray verses of his are, however, quoted in the anthologies. No less than ninety-two stanzas have been quoted under Umāpati or Umāpatidhara in Srīdharadāsa's Sūkti-karnāmṛta, twelve stanzas under Umāpatidhara in Jalhana's Subhāṣitamuktāvalī, and two under that name in the Sārngadhara-paddhati.

# े आता पद्धतिमग्रतः पश्चपतिः श्राद्धादिक्तत्वे व्यथा-दीग्रानः क्रतवान् दिजाह्मिकविधी च्येकोऽपरः पद्धतिम्।

The Brahmana-sarvvasa, Printed edition, Calcutta, first half of verse 24.

<sup>2</sup> उदयनवन्तभद्राभ्यां सप्तप्रती प्रिष्यसोदराभ्यां मे । खौरिव रिवचन्द्राभ्यां प्रकाश्चिता निर्मेनीकृत्य ॥ ७५५ ॥ <sup>3</sup> उदयनकित्तस्यादेश्चात् प्रश्चितिनासिनीं सुनिकतपदन्यासेः सम्बद्विदग्धमनोद्यां।

J.A.S.B., LXVI, p. 23; Ep. Ind., VI., p. 202; first half of verse 33.

4 For the time of the inscription see my article, J.A.S.B. LXXII, 1903, p. 20.

5 As the anthologies will be frequently referred to, their names are abbreviated as follows:—

(a) Srīdharadāsa's Sūkti-(in two places called Sadukti-) karn-āmṛta—S.K. The pagings are from the MS., Asiatic Society, Bengal (A). The variæ lectiones are from a MS. of the Sanskrit College Library (S), and one of the Serampore College Library (Sr.).

He has been identified with one Umāpati Upādhyāya, author of the Pārijāta-harana-nātaka (R. L. Mitra, Notices of Sanskrit MSS., V., p. 205), but, I think, on insufficient grounds, as the latter flourished under a different king, Hindupati Hariharadeva, after the Yavana rule (Do., V., p. 206).

The anterior time of Umapatidhara is fixed by his composition of Vijayasena prašasti. The posteri-His time. or limit is fixed by his mention in the SK. (A.D. 1206), and by the mention of his name

in the Gita-govinda, Sarga I, verse 4. He probably lived in the reign of Laksmanasena, as Sridharadāsa quotes a verse of his lauding his father Vatudasa, the friend and chief officer of that king.1 Roughly speaking, he flourished in the third quarter of the twelfth century.

Of the verses quoted in the S.K., I find four are taken from the Deopara prasasti, viz., verse 7 of the His verses. inscription (S.K., III. 49.4, fol. 139a), verse 23 (III. 17.5, fol. 126a), verse 24, (III. 5.5, fol. 120b), and verse 30 (III. 17.4, fol. 125b); while the familiar hymn to the god Ganesa (Devendra-mauli-mandāra) is attributed to Umāpatidhara (I. 29.5, fol. 16a). The verse chinte Brahma-śiro, which in S.P. is ascribed to Dhoyi (No. 1161), is in S.K. referred to this poet probably more correctly (IV. 2.2, fol. 142b); on the other hand the verse priyāyāh pratyuse, which in the S.M. (fol. 73) is put under Umapatidhara, is ascribed in the S.K. to Dhoyika (II. 135.3, fol. 99b); and similarly Karabharabhasā, which in S.V. is credited to Bhallata (No. 669) is put under Umāpatidhara in S.M. (fol. 42a). In the S.M. fol. 416, Karabha-dayite is credited to Umapatidhara, while in S.V. and S.P., two verses with the same initial words are found (Nos.

# <sup>1</sup> अलमादिवराहेगा वट्दासं परं स्तुमः। जगदुद्धरता येन न वन्नीकृतमाननं ॥ उमाप्तिधरस्य ॥

V. 76.4, Sr. pp. 440-1 (omitted in A).

<sup>(</sup>b) Jalhana's Subhāṣita-muktāvalı - S.M. 'Dr. R G. Bhandārkar, Report on the Search for Sanskrit MSS. in the Bombay Presidency, 1897, pp. I-LIV). (c) Vallabhadāsn's Subhāsit-āvalī-S.V. (Peterson's Edition, Bombay Sanskrit Series).

<sup>(</sup>d) Šārngadhara-paddhati—S.P. (Peterson's Edition, B. S. S.)

<sup>2</sup> The verses in the S.K. are given below :--

I. 6<sup>4</sup>4, I. 11<sup>3</sup>.4, I. 12<sup>4</sup>4, I. 18<sup>2</sup>2, I. 22<sup>1</sup>1, I. 26<sup>4</sup>4, I. 29<sup>5</sup>5, I. 37<sup>2</sup>2, I. 43<sup>5</sup>5, I. 52<sup>2</sup>4, I. 55<sup>3</sup>.4, I. 57<sup>3</sup>3, I. 61<sup>1</sup>1, I. 67<sup>2</sup>2, I. 72<sup>4</sup>4, I. 73<sup>1</sup>1, I. 90<sup>4</sup>4; II. 8<sup>5</sup>5, II. 11<sup>2</sup>2, II. 16<sup>3</sup>.4, II. 20<sup>1</sup>.2, II. 24<sup>5</sup>5, II. 35<sup>5</sup>5, II. 48<sup>4</sup>4, II. 68<sup>5</sup>5, II. 64<sup>2</sup>2, II. 31<sup>4</sup>45, II. 94<sup>2</sup>2, II. 10<sup>2</sup>1, II. 106<sup>5</sup>5, II. 107<sup>2</sup>.3, II. 109<sup>2</sup>2, II. 116<sup>2</sup>-3, II. 117<sup>2</sup>2, II. 125<sup>4</sup>4, II. 144<sup>3</sup>-4, II. 148<sup>1</sup>1, II. 154<sup>1</sup>1; III. 14<sup>1</sup>4, III. 5<sup>5</sup>5, III. 17<sup>3</sup>-5, III 20<sup>4</sup>4, III. 26<sup>4</sup>4, III 33<sup>1</sup>1, III. 40<sup>4</sup>4, III. 48<sup>3</sup>5, III. 49<sup>3</sup>-4; IV. 2<sup>2</sup>2, IV. 3<sup>4</sup>4, IV. 4<sup>2</sup>2, IV. 6<sup>5</sup>5, IV. 20<sup>4</sup>4, IV. 21<sup>4</sup>4, IV. 25<sup>5</sup>5, IV. 27<sup>5</sup>5, IV. 30<sup>5</sup>5, IV. 41<sup>5</sup>5, IV. 46<sup>5</sup>5, IV. 48<sup>2</sup>2, IV. 52<sup>3</sup>3-5, IV. 54<sup>4</sup>4, IV. 55<sup>4</sup>4, IV. 55<sup>3</sup>4, IV. 59<sup>3</sup>3-4, IV. 68<sup>3</sup>3, IV. 70<sup>3</sup>3, IV. 72<sup>2</sup>2; V. 13<sup>3</sup>3, V. 16<sup>1</sup>1, V. 18<sup>3</sup>8-4, V. 29<sup>1</sup>1, V. 61<sup>3</sup>3, V. 70<sup>3</sup>3, V. 76<sup>4</sup>4.

666 and 667 of S.V., and 960 and 953 of S.P., 960 being claimed as Bhagavata Vyāsasya). One verse, tenākhāni, is found under Umāpatidhara both in S.K. (V. 13.3) and in the S.M. (fol. 1846). S.P. quotes two more verses under this poet (Nos. 753, 3490).

Thus, excluding the Deopara prasasti, we get one hundred more verses of Umāpatidhara. All of them are not of equal merit. Two criticisms are, however, available, one by the poethimself, and one by Jayadeva. In the Deopara prasasti, verse 35, Umāpatidhara calls himself as "the poet whose understanding has been purified by the study of words and their meanings." In the Gīta-govinda, it is remarked:  $-V\bar{a}cah$  pallavayaty= $Um\bar{a}patidharah$  or Umāpatidhara sprouts words (i.e., lengthens verses by addition of adjectives, &c.). Four verses of his cited below supply some historical facts. The first three refer to some unknown king (probably some Sena king) in connection with  $Pr\bar{a}gjyotis$ -endra, with  $K\bar{a}si$ -janapadāh, and with Mleccha-narendra; the fourth mentions liberal gifts to a poet for a work named Candracūda-carita by a king Cāṇakya-candra.

(1) गन्धेभस्तन्थकगडू मरगुरु मरजुर (इहि ?) स्त्रो जलो हि य खेल-दी ची (चि) वाचालकालाचल विपुत्त प्राचाकि लित स्थे निषसाः । कामिन्यः सैनिकानां विधुतविधुरता भीतयो गीतवन्थे-यस्य प्राग्न्यो तिषेन्द्रपण विपरिगतं पौरुषं प्रस्तुवन्ति ॥

III. 20.4, fol. 127a.

(2) नखाङ्गं नारीग्रामनिषालु जितं केतकदणं कालामिन्दोः पत्रं परिग्रातिविध्योगं जलक्हां। निरोच्यन्ते यस्य द्रतमिजितनोकाटकघटा- हठाक्रस्थिन्य स्थानिकस्थित काधीजनपदाः॥

III. 26.4, fol. 129b.

- (8) साधु स्नेच्छनरेन्द्र साधु भवतो मातेव वौरप्रसू-नौंचेनापि भवदिधेन वसुधा सुन्तन्तिया वर्तते। देवे कुप्यति यस्य वैश्विशिष्टिमन्माराङ्क्षमन्त्रेपुरः (?) प्रस्त्रं प्रस्त्रमिति स्मुर्ग्ति रसना पत्रात्तरात्वे ग्रिरः॥ V. 18.3, fol. 178a.
- (4) निष्यत्ने सति चन्द्रचूड्चरिते तत्तत्र्पप्रक्रिया-जातैः सार्द्धमरातिराजकाग्रिरो रह्नाञ्चकीनां चयं।

# ै तरं-Sr. 'सप्तखर्णे प्रतानि विंग्रतिग्रती क्ष्यस्य लक्षत्रयं स्रामाणां ग्रतमन्तरकुक्तवये चाणकाचन्द्रो दही ॥

V. 29.1, fol. 182b.

### (V) KESAVA OR KESAVASENA.

In the S.K. six verses appear under Srimat-Kesavasenadeva and one under Kesava. They are apparently one and the same man. Kesavasenadeva probably belongs to the Sena royal with a verse of Laksmanasenadeva and of Jayadeva (s.v. Jayadeva). Another verse of his is quoted here:—

केलासो निज्ञतश्रीः परि मिलितवपुः पार्व्वयाः श्वेतभानुः प्रोषः प्रच्छन्नवेग्राः कलयति न क्विं जाह्नवीवारिवेखिः। पीतः चौराम्बुराग्रिः प्रसभमपद्धतः कुञ्जरो देव भर्त्तु-यंत् की नौंनां विवत्ते रज्ञांन स भगवाने कदन्तोऽप्यदन्तः॥ 1. • पिहित-A. & S. III. 52'3, fol. 1406,

## (VI) ACARYA GOVARDHANA.

Author of the Āryā-sapta-śatī. In the S.V. (fol. 127b) and Govardhana, the Ācārya poet.

the S.P. (No. 466), its verse 66 (anya-mukhe durvādo), is quoted under Govardhana. In the S.K. six new verses, and in the S.P. one new verse (No. 3400) are quoted under this name.

The Āryā-sapta-satī consists of 54 introductory stanzas, 696

His Āryā-sapta-satī consists of 54 introductory stanzas, 696

stanzas in the main body arranged alphabetically a to kṣa, and six concluding stanzas—in all 755, all in the Āryā metre. It was composed evidently in imitation of Hāla's Gāthā-sapta-satī in Prākṛta and like its model is thoroughly amatory. The stanzas justify the remark in the Gita-govinda that the elegant works of Ācārya Govardhana were distinguished by the erotic sentiment (Śrngār-ottara-satprameya-rachanair=Ācārya-Govardhana, sarga I, verse 4).

The posterior limit of the poet's time is approximately fixed by the above reference in the *Gita-govinda*, and the anterior limit by the verse 39 of the poem, in which he acknowledged a king of

S.K.—I. 54\*5, I. 65\*2, I. 72\*5; III. 49\*1, III. 52\*3-4; under Keśava,
 Verses in S.K.—II. 8\*4, II. 80\*5, II. 103\*1, II. 142\*5, II. 145\*5; V. 12\*4.

the Sena family as his patron.¹ Tradition names Lakṣmaṇasena as the king in whose court he flourished. His time may be thus approximately put in the fourth quarter of the 12th century. The poem was revised by his pupils Udayana and Balabhadra (s.v.). Five commentaries on it are as yet known, viz. (1) Ananta Paṇḍit's Vyaṅgārtha-dīpana, (2) Gokulacandra's Rasika-candrikā and the tīkās of Gaṅgārāma, Nārāyaṇa, and Visvesvara (vide Aufrecht's catalogus catalogorum.)

Of the six verses in the S.K. not to be found in the  $Ary\bar{a}$ 
His other verses.  $sapta-\bar{s}at\bar{\iota}$ , one is given here as sample:—

हारो यत्र व्यवधि रचना तन्तु येनापराधो रोमोद्भेदोऽप्यशिषिजतराजिङ्गनेष्यन्तरायः। यस्मिन् वाच्हा विरमति मिणो नार्डनारीश्वरते तद्दाम्ययं विभजतु कथंकारमन्याम्गाची॥

II. 80.5, fol. 78a.

#### CIRANTANA-SARANA.

One verse is quoted in the S.K. under this name. He is probably to be identified with Sarana (s.v.).

#### (VII) JAYADEVA.

Author of the Gitagovinda. Little is known about him, Jayadeva, the and that little mostly traditional and conlyrical poet.

One tradition puts him in Tirhut. About it Colebrooke

First tradition— wrote:—

"Jayadeva is by the Maithilas said toof Tirhoot. "be their countryman. In Tirhoot, a town
"on the Belan river near Jenjhārpur, bears the name of Kendoli,
"supposed to be the same as Kendūli.....kilva sic vilva is a family
"of Maithili Brahmanas."

Beyond the similarity in the name, nothing else has been found to support it. The tradition may have originated by confounding the *Gīta-govinda-kāra* with a later vernacular poet, Jaideb. The latter flourished in Mithilā, by about 1400 A.D. (J.A.S.B. 1888, p. 12); and Dr. Grierson extracted one Hindi song of his in the J.A.S.B. 1884, p. 88.

A second tradition claims him as of Orissa (see Candradatta's

Second tradition —of Orissa

Sanskrit Bhaktamālā, sargas 39 to 41). According to it, Jayadeva was born in the village Binduvilva near Jagannāthapurī

सक्तक्रक्ताः कल्पयितुं प्रभुः प्रवन्थस्य कुमुदवन्धोस्य । सेनकुल्तिक्वकभूपतिरेको राकाप्रदोषस्य ॥ ३८ ॥

in Utkala, that he married Padmāvatī, that he composed the Gītagovinda with the line smara-garala-khandanam written by Lord Kṛṣṇa in the guise of the poet (chapter 39)¹; that the king of Orissa composed another Gītagovinda which Lord Jagannātha rejected in favour of Jaydeva's with some miracles indicating the Lord's favours to him and his wife (ch. 40); that Jayadeva was once robbed and had his hands and feet lopped off but that the limbs were miraculously restored; that in his old age he wished to have a bath in the Ganges, and the river goddess appeared before him in her watery form (ch. 41).

This tradition is not old and seems to have jumbled together facts of different periods. The Sanskrit Objections. Bhaktamālā was evidently based on the Hindi Bhaktamāl of Nābhādāsa, as edited and rewritten by Nārāyaṇadāsa in the reign of Shahjehān, A.D. 1628-1658 (Grierson, Mod. Ver. Lit. Hind., J.A.S.B. 1888, p. 27). The tradition cannot thus be traced back beyond the seventeenth century, and requires strong corroboration before it can be accepted as a narration of events taking place in the twelfth century. On the other hand it appears to confound the Gitagovinda-kāra with a Jayadeva who flourished in the court of an Utkala king (vide Alankāra-šekhara<sup>2</sup>), and to tag to it the fact of an Abhinava-Gītagovinda, which was composed by an Utkala king Purusottamadeva Gajapati, A.D. 1470-1497 (H. P. Sāstri's Report, 1895-1900, p. 17).

> गग्नाथपुरीप्रान्ते देशे चैवोत्कलाभिधे। विन्दुविल्वइतिख्यातो ग्रामो ब्राह्मग्रसंकुलः ॥ २ ॥ तत्रोत्कले दिजो जातो जयदेव इति श्रुतः। विद्याश्यासम्तः ग्रान्तः पुरुषोत्तमपूजकः ॥ ३ ॥

एकदा जयदेवस्तु मनस्थेवमित्तयत्। स्वयं क्ततेन गौतेन तोषयिष्यामहं॥ ३०॥ इति निश्वित्य निर्माय गौतगोविन्दनामकं। गायंस्तु देवदेवाग्रे पत्था सह नन्ते हा॥ ३८॥ इति श्रीभगवद्गृत्तिमाहात्स्ये जयदेवचिर्तं नामैकोनचलारिंग्रः सर्गः॥

> श्वाक्यवक्ष्णिवीस्तोः परिषदि प्रख्यातसंख्यावता-महायाभूततकंककंष्यतया विच्छिद्य विद्यामदम् । ये केऽप्युत्कालभूपते तव सभासंभाविताः परिष्ठताः पत्रं श्रीजयदेवपरिष्ठतकविक्तन्मृद्धि विन्यस्यति ॥ प्रे ॥

A third tradition refers him to Bengal, describes him in a verse I as a Paudit in the court of Laksmanasena, and locates his home in the village Kenduli, District Birbhum.

This tradition appears to be the most reliable of the three. is accepted in all the existing commentaries most reon the Gitagovinda. In the oldest known liable. commentary, the Rasika-priyā of Kumbhakarņa, under verse 4, sarga I, it is noted:—Iti sat-panditā-stasya rājño-Laksmnasenasya prasiddhā iti rudhih. Of the king Kumbhakarna of Medapāt (Mewād) various inscriptions have been found ranging from A.D. 1438 to 1459. So the tradition was current at least in the first half of the fifteenth century. The verse 4 itself gives Jayadeva's name with Umāpatidhara, Saraņa, Govardhana and Dhoyi, all of whom are Bengal poets probably contemporaries of the king Laksmanasena; and this juxtaposition is best explainable on the supposition of Jayadeva too being a Bengal contemporary. Furthermore, the stanza 1, sarga I of the Gitagovinda, is found echoed in versification and meaning in a verse of Laksmanasena and one of Kesavasena 3; and this similarity distinctly indicates a connexion of the poet with the Sena royal family.

Said to have been inscribed over the door of the king's sabha-hall.

- ै वाचः पञ्चवयत्यमापितधरः संदर्भश्चिद्धं गिरां जानीते जयदेव एव ग्रार्गः श्लाध्यो दुरूहः दुतेः। ग्रह्मारोत्तरसत्प्रमेय रचनेराचार्य्यगोवर्धनः साद्धींकोऽपि न विश्रुतः श्रुतिधरो धोयी कविद्यापितः॥ ॥
- $^{\mathtt{a}}$  ०द्रते-v.l.  $^{\mathtt{b}}$  वचनेullet -v.l.  $^{\mathtt{c}}$  ्नः-v.l.
- 3 मेचेर्मेंद्रमम्बरं वनसुवः ख्यामाक्तमालड्रमें-नेतां भीषरयं त्वमेव तदिसं राघे ग्रष्टं प्रापय । इत्यं नन्दिम्द्रत्व्वितियोः प्रत्यध्वकुञ्जड्रमं राधामाधवयोर्जयन्ति यसुनाकुले रहः केलयः ॥ १ ॥ गीतगोविन्द, सर्गः १

The Alankāra-Sekhara of Keśava Miśra, Nir. Säg. Pr., p. 17.
This work is not older than the 16th century A.D. The author lived in the court of Mānikyachandra, and a king bearing that name began to rule in Kangra in A.D. 1563 (A.S.R, V. 160).

<sup>1</sup> गोवर्धनम्ब प्रार्गो जयदेव उमापतिः। कविराजम्ब रह्मानि समितौ लच्चाग्रस्य च।

Jayadeva's Famitwo of the twelfth sarga), in which Jayadeva's Famity, Parents.

Kamā (variants Bāmā, Rādhā), and his friends Parāšara and others.¹ This passage is doubtful, as it is not found in many of the older texts and in older commentaries like the Rasika-priyā. In two MSS. of the Indian Government Collection, Calcutta, copied in Śaka 1697 and 1698 (Nos. 3867 and 3868 respectively) the line is omitted in the texts but commented on in the tīkās; at the same time it exists in the oldest MS. known, the Nepal MS. dated A.D. 1494.

The traditions name Jayadeva's wife as Padmāvatī; and the verse 2, sarga I, and verse 8, sarga X, seem to support this view.<sup>2</sup> But a different reading

क्षणालदनमालया सहक्तं केनापि कुञ्जान्तरे गोपीकुन्तलवहः(?)दाम तदिदं प्राप्तं मया ग्रह्मतां। इत्यं दुग्धमुखेन गोपिश्रश्चना खाते चपानम्त्रगो राधामाधवयोर्जयन्ति विलतसोरालसादृष्टयः॥

श्रीमह्मद्मागा सेनस्य ॥

S.K., I. 55.2, fol. 27b.

<sup>a</sup> •वेनदत्तस्य—Sr.

खाह्नताद्य मयोत्सवे निश्चित्रहं श्रून्यं विसुचागता चौरः प्रेखननः कथं कूलवधूरेकाकिनी यास्यति। वत्स त्वं तदिमां नयालयमिति श्रुत्वा यश्चोदागिरो राधामाधवयोजयन्ति मधुरस्रोरालसादृष्ट्यः॥

नेप्रवसेनदेवस्य ॥

S.K., I. 54.5, fol. 27b.

े श्रीभोजदेव प्रभवस्य <sup>b</sup>रामादेवीस्तत श्रीजय देवकस्य । पराधरादिप्रिय वर्गकरहे श्रीगीतगोविन्दकवित्वमस्त ॥ ११ ॥

<sup>३</sup> • प्रवरस्य. प्रभवस्य. <sup>b</sup> वासा, राक्षा. <sup>c</sup> ० देवस्य. <sup>d</sup> बन्धु०..

<sup>2</sup> वाग्रेवताचरितचिचितचित्तसद्गा पद्मावतीचरणचारणचक्रवत्तीं। First half, I. 2. जयित, <sup>2</sup>जयरेवकविभारतीभूषितं मानिनीचनजनित्रणा<sup>5</sup>तम्। Second half, X. 8.

ै पद्मावतीरमण्ड्यदेव-कविभारती भणितमतिशातम् : पद्मावतीरमण् कविभारती मानिनी०। <sup>b</sup> गीतं. of X. 8 omits Padmāvatī-ramana; and the latter reading, while supported by old  $t\bar{t}k\bar{a}s$  like the  $Rasika-priy\bar{a}$ , is preferable according to versification rules. As regards I. 2, the same commentary refers to the tradition and rejects it ( $Padmāvat\bar{t}$  tasya kalatrameke vadanti yat-tan-na vicāra-cāru).

According to the commentators, Jayadeva's home is indicated in the second line of III. 10.1 The name is variously read as Tinduvilva (vide the Rusika-priyā) Kinduvilva, Kinduvilla, Kendubilla, Kendubilva, Sindubilva. It is identified with Kenduli, District Birbhum, Bengal, on the north bank of the river Ajaya. An annual fair is held there on the last day of Māgha in Jayadeva's memory.

In the S.K., two verses of the Gitagovinda are quoted under Jayadeva, viz., XI. 11, Jaya-śrī-The time of the Gitagovinda.

The time of the under Jayadeva, viz., XI. 11, Jaya-śrī-vinyastair° (I. 59·4, fol. 29b) and VI. 11, Aṅgeṣv-ābharaṇaṁ (II. 37·4, fol. 60b). The poem must therefore have been composed before a.d. 1206. By the mention of Dhoyī and other poets in I. 4, it could not likely have been written earlier than the rule of Lakṣmaṇasena. Its time therefore approximately falls in the fourth quarter of the twelfth century. Its verses are quoted (under Jayadeva) four times in the S.V., and 21 times in the S.P.² The verse I (3) 11, Unmīlan-madhu-gandha° is quoted (without the author's name) in the rhetorical work sāhitya-darpaṇa, as an example of the alliteration mṛtt-ānuprāsa (X. 4).³

# 1 वर्षितं जयदेवकेन हरेरिदं "प्रवर्षोन । bतिन्दुविन्वसमुद्रसंभवरोहिग्गीरमग्रेन ॥ १०॥

<sup>a</sup> प्र**पतेन.** b किन्दुविस्त, &c.

S.V.—Nos. 1313-4, 1357, 1613; S.P.—Nos. 80, 3380, 3431, 3460-1, 3481-2, 3498-3500, 3502, 3548-3550, 3609, 3617, 3658, 3681, 3686-7, 3820.
 In the Appendix to my article on "The Eastern Ganga Kings of Orissa"

(J.A.S.B. LXXII, 1903, p. 146) I came to the con-Time of the Sahityaclusion that the Sahitya-darpana was an Oriya work, and that its author Visvanatha flourished probably not later than the beginning of the 14th century. Since then I have seen certain extracts from the same author's Kāvyaprakāša-darpana in the late V. R. Jhalkikāra's edition of the Kāvyaprakāśa (Bom. Sans. Ser., introd. pp. 30-1). They confirm my conclusions; e.g., this tika says under 5th ullasa-vaiparītyam rucim-kurv-iti pāṭhaḥ, atra cinku-padam Kāimīr-ādibhāṣāyām-aślila-ārtha-bodhakam Utkal-ādi-bhāṣāyām 'dhṛta-bāndakadrava' ity-The reference to a colloquial Oriyā word (still in use) shows him to be an Oriva. Furthermore he mentions therein his Sahitya-darpana (2nd and 10th ullasas), Candrakalā-nāţikā (8th ullasa) and a new work mama Narasimha-vijaye (5th ullasa). The name of the last work indicates that he flourished under the king Narasimha. As his father, Candrasekhara, composed a verse in honour of Bhānudeva, this Narsimha cannot be earlier than Narasimha II., and cannot be much later as Visvanātha's grandfather's younger brother, Candidāsa, wrote his Kāvyaprakāša-dīpikā (quoted in K.-darpaṇa) probably in the 18th century. Narasimhadeva II. ruled Orissa between A.D. 1278-9-1305-6 (J.A.S.B. LXXII., 1903, p. 29ff).

No other work of this Jayadeva has yet been found. In some of the Gitagovinda MSS, eight stanzas are Other poems of added at the end under the heading Ganga-Javadeva. stava-prabandhah whose last line runs: bhanantam=iha sādaram dhīra-Jayadeva-kavi.º In the S.K. a verse is quoted under Jayadeva referring to Gaud-endra. There are at least two other Jayadevas, Sanskrit poets, earlier than the 13th century; but none of them is known to have any concern with Gaudendra. Is this verse then taken from some unknown poem of the Gitagovinda-kāra? In the SK. besides this verse 1 (and the two taken from the Gitagovinda), 28 more are quoted under the name Jayadeva; they cannot be traced in the Prasanna-Rāghava of the dramatist Jayadeva, or the candr-āloka of the rhetorician Jayadeva. Possibly some of them may be from an unknown poem of our Bengal Jayadeva

No poem was more popular in India than the Gita-govinda.

The Popularity Numerous MSS. of it lie scattered in different parts of India from Kasmir and Nepal downwards. The search for Sanskrit MSS. has brought to light no less than thirty-seven commentaries (Aufrecht's Cat. Catalog.); and the earliest known the Rasika-priyā goes back to the middle of the fifteenth century with the powerful king Kumbhakarna himself as the commentator. The poem has been imitated in works like the Rāma-gīta-govinda, Abhinava-gīta-govinda and others. It has been several times translated in the vernaculars, Bengali, Oriyā and Hindi. It ranks among the quasi-sacred works of the Vaiṣṇavas; and its songs were repeatedly sung by Caitanya and his followers in their processions.

A remarkable testimony to its popularity is borne out by as testified inscriptions. In an Oriyā inscription of Puri dated 17th July, A.D. 1499, the king Pratāparudradeva ordered that the dancing girls and the Vaisuava singers should learn and sing only the songs of the Gitagovinda, and should not learn or sing any other songs before Lords Jagannātha and Balarāma (J.A.S.B., LXII, 1893, pp. 96-7). In another inscription dated 29th June, A.D. 1292, 2

े लख्योकेलिसुजङ्गमसमहरे सङ्कल्पकल्पद्रम श्रीयः साधकसङ्गदङ्गरकलागाङ्गेयरङ्गप्रियः। गोड़ेन्द्रप्रतिराजराजकसभालङ्कारकारार्पित प्रवर्धित्वितिपालगालकसतां दृष्टोसितुष्टावयं॥ जयदेवस्य॥

S.K., III. 11.5, fol. 123a.

The reader will note the alliterations in each line.

<sup>&</sup>lt;sup>2</sup> This inscription, as yet unedited, was found on a stone recovered at Anāvāda, old Pāṭan, Kādi Division, Baroda, from a tank which was being excavated in Samvat 1956 as a famine work. The date runs in the original as follows:—Samvat 1348 varse Āṣāḍha Šudi 13 ravāv-ādyeha Śrīmad-

the verse I. (pra° 1). 12, vedān-uddharate, is quoted in the very beginning as the invocation stanza of the praśasti. Such an honour shows that the work had already within a century become quasi-sacred.

The Gitagovinda has been many times printed, but the only good edition available is that from the Niraya-sāgara Press, Bombay. Lassen's edition (1836) is out of print. A critical edition is a great desideratum; and here is a nice opportunity for a Bengal scholar.

#### (VIII) DHARMA-JOGESVARA.

In the S.K. a verse of his is quoted highly lauding the gifts

Dharma-Jogesvara, a Bengal
Poet.

Of a Gaudendra 1 and thus pointing to his
being a Bengal poet. Besides this, the
S.K. quotes eleven more verses under this
name, 2 and distinguishes him from Yogesvara (51 verses quoted) and Karañja-Yogesvara (2 verses quoted).

#### (IX) DHOYĪ OR DHOYĪKA.

Author of the  $Pavana-d\bar{u}tam$ . Already treated by me (J.A.S.B. New Series, 1905, I. pp. 41-71; ib., 1906, pp. 15, 18 22).

#### (X) PASUPATI OR PASUPATIDHARA.

Elder brother of Halāyudha; wrote the Dasa-karmma-paddhati Pasupati, a writer on rites. ( ${}^{\circ}d\bar{\imath}pik\bar{a}$ ), a guide to the performance of the ten domestic ceremonies according to the Sukla Yajurveda, Kāṇva-sākhā. He was  $R\bar{a}ja-Pandita$ , according to colophon. His work should be

-Anahilavāṭak-ādhiṣṭhiṭa-Mahā[rājādhi-\*]rājá-Śrī-Śāramgadeva-kalyāṇa-vījāya rājye. The date is apparently in the year, southern expired. The inscription records the erection of a Kṛṣṇa temple. I am indebted to Mr. D. R. Bhaṇḍārkar for these informations.

> 1 वासः खर्ण ग्रहेषु सख्यममरेः कत्पद्रमाणां वने कीड़ा खर्गवधूगणेः सह सुधाकगढं मुदा पौयते। कछेनेदमकारि देव भवता हत्वा रणे वैरिणां तुष्टः प्रैष्यजनाय वेद्मिनपरं गौड़ेन्द्र किंदास्यसि॥

> > III. 16.4, fol. 125a.

<sup>2</sup> S.K.-II. 23·1, II. 33·4, II. 58·2, II. 62·4, II. 120·1, II. 134·3; IV. 2·4-5, IV. 44·5, IV. 46·3, IV. 61·2

ै इति राजपिखतश्रीपश्रपतिविर्विता यजुर्थे दिकाएवादिशाखानां विवाह। दिदश्रसंख्वारपद्धतिः समाप्ता। The colophon of the Srāddha-paddhati runs:—इति यजुर्वेदोत्ताम्बद्धिकश्राद्धं समाप्ता।

differentiated from that of the same name by Bhavadeva Bhatta

(Sāmaveda) or by Nārāyana Pandita (Rgveda).

In the introduction to the Brāhmana-sarvvasva Halāyudha noted that Pasupati had written a Paddhati or manual on Srāddhas (v. 24) and another Paddhati on Pāka-Yajña (v. 43). No MS. of the latter had as yet come to light. The Srāddha-paddhati is found in the As. Soc. Library, a Bengali MS., fol. 42-52.

In the S.K. one verse is quoted under the name Pasupatidhara.\*

Pasupatidhara, Whether he is identical with Pasupati or not, I cannot say. Umāpatidhara has sometimes been shown as Umāpati. In the S.K. are named several authors with \*\*Ohara\* at the end, such as, Dharanīdhara, Laksmīdhara, Sankhadhara, Sāgaradhara, Sancādhara, Sūryadhara.

#### (XI) BALABHADRA.

A pupil of Ācārya Govardhana, who with Udayana (s.v.)

Balabhadra, pupil of Govardhana.

Whether he is identical with Balabhadra, under whose name five (5) verses are quoted in the S.K., cannot be said at present. A sample is extracted below:—

हंस श्रे शिकुत् ह जेन | कालयन् भूषा कपालाव लिं वाला मिन्दुकलां स्टागल र भसादान्दोलयन् पाश्चिमा । रक्ताम्भोज धियो च लोचन पुटं लालाट मुद्दाटयन् पायादः पितुरङ्कभाक् शिशुजनकी डोन्मुखः षण्मुखः ॥

I. 29-4, fol. 19b.

निवन्धेन समेतां यत्पाकयचास्य पद्धतिम् ।
च्येष्टः पश्चपतिस्वक्रे तेनास्माभिनं मा क्रता ॥ ४३ ॥
परिणतप्रस्कान्ता पाण्ड्रा ग्राह्डभित्तिः
कुचककसमुख्यीः कालिमानं दधाति ।
व्ययगतक्षप्रभावं पीनतामेति मध्यं
वप्रतिष्यगौरं गर्भमाविष्करोति ॥

S.K.-II. 10.5, fol. 49b.

<sup>1</sup> For verse 24, see Isans. For verse 43:-

<sup>&</sup>lt;sup>8</sup> S.K.—I. 29.4; II. 15.1, II. 28.1; IV. 19.5, IV. 50.3.

#### (XII) BALLĀLASENADEVA.

Father of Laksmanasenadeva (A.D. 1160 - 61—1169 - 70). The king Ballāla- In A.D. 1169-70 he completed the Dānasenadeva, as wrisagara, a manual describing the various kinds of gifts and the connected ceremonies. In A.D. 1168-69 he started the compilation of the Adbhutasāgara, but died before completing it on the banks of the Ganges. It was completed by Laksmanasena. The Adbhutasāgara deals with omens and portents. It gives the Sakabhuja-vasu-daša or 1082 as his first year. Aniruddha (s.v.) was his guru, or spiritual guide.

The S.K. and the S.P. (No. 764) quote only one of his verses:—

विरम तिमिर साहसादस्या-

विह्नमिशा निर्कतसुपागतस्ततः किं।

क्लयसि न पुरो महोमहोिक-

भ्वतिवयदम्यदयत्ययं 'सुधां सुः ॥ वश्चीबह्वा खसेनदेवपादाणां ॥ ³

 $^{2}$  द्यदि रिवरस्रिमतः खतस्रतः किम् -S.P.  $^{b}$  द्यृतिनिधिरस्यु--S.P.

° ममा :-S.P.

 $^{\rm d}$  बज्जालसेन-S.P.

#### (XIII) MADHU OR DHARMĀDHIKARAŅA MADHU.

In the S.K. under Dharmādhikaraṇa Madhu a verse is quoted

The Judge praising Vaṭudāsa (the anthologist's father)
as the right-hand staff of the king Lakşmaṇasena.<sup>2</sup> Presumably, therefore, he was
a Bengal man, and as his title signifies a judge. Under the name
Madhu seven more verses are quoted in the S.K.<sup>3</sup> He may be
identical with the judge.

lefor references to the MSS. of the Dāna-sāgara and the Adbhuta-sāgara, see my article, J.A.S.B., N.S., 1905, I. p. 46, Note 1. In addition, one MS. of the Adbhuta-sāgara is in India Government, and one MS., apparently a fragment, noticed in the "Notices" (N.S.), Vol. II. pp. 2-3 (No. 3). One copy of the Dāna-sāgara is in the As. Soc.'s Library.

² ज्यानन्दं विद्धां तनोति तन्ते कर्याञ्चरं विद्धां श्रीमानादिवराइपादसरसीजन्म प्रणामिप्रयः। सदन्धुर्ग्यसिन्धनश्चन्राज्ञी भ्रिमेस्य भ्वतमावनेः श्रीमस्रचार्यसेनद्व्यसुजादखोऽपि चखो वटः॥ १ प्रयाणाम—S. भवार्या—A. भवार्य—S. V. 76·1, fol. 2016. 8 S.K.—II. 14·2, II. 147·1; V. 7·2, V. 9·1, V. 15·4, V. 66·2-3.

#### (XIV) MĀDHAVASENA.

Under this name one verse is quoted in the S.K.! He probably belongs to the royal family. Five more verses are found in that anthology under Mādhava.<sup>2</sup> Whether he is the same as Mādhavasena or not cannot be definitely said at present.

#### (XV) LAKSMANASENADEVA.

The well-known Sena king (A.D. 1169-70—1200?) The S.K.

The king Laksmanasenadeva as quotes nine verses of his <sup>8</sup> and the S.P.
one (No. 923). In the inscriptions he is called Parama-vaiṣnava, and they begin with an invocation to Nārāyaṇa. His verses, therefore, often refer to Kṛṣṇa; and where not, are amatory in nature. They are not wanting in elegance; e.g., take the following three:—

- (2) खिवरतमधुपानागारिमिन्दिन्दिवासामिभिरसानिकुञ्जं राजहंसीकुलस्य ।
  प्रवितत वज्जप्रानं मद्यपद्मानयाया

  वितरित रितमह्त्सारिष नीनातज्ञागः॥

  विसर्वत—Sr. V. 12·1, fol. 175%
  - यचाग्डालग्रहाङ्गनेषु वसितः कौलेयकानां कुले
     जन्म खोदरपूरग्रञ्च विष्ठसैई स्पर्भयोग्यं वषुः ।
     "तन्मृष्टं सकलं त्वयाद्य श्रुनक च्लोग्गीपते राज्ञया
     यत लंकाञ्चनग्रहङ्कला वस्त्रितः प्रासादमारोज्ञति ॥

\* जन्मरं—Aufrecht. IV. 48.3, fol. 160b. Aufrecht, Z.D.M.G. 36, 540-1.

<sup>2</sup> S.K.—I. 48·5; II. 164·4; III. 6·2; IV. 22.2, IV. 35·3. <sup>3</sup> S.K.—I. 55·2 (s.v. Jayadeva), I. 57·2; II. 16·2, II. 61·5, II. 80·1, II. 82·3·4, II. 105·3, II. 108·1; V. 12·1, V. 66·4. (3) एते परः सर्भि कोमलहोसधम लेखानिपीतनवपद्मवधीत्यामानः। पुर्खाश्रमाः श्रतिसमी हितसामगीति साकृतिश्वलक्रह्मकलाः स्मर्गता

V. 66.4, fol. 197b.

#### (XVI) VETĀLA, BHATTA VETĀLA, OR RĀJAVETĀLA.

In the S.K. under Vetāla one verse is quoted, which laud highly Vatudasa. He was therefore pre-Vetāla, a Bengal sumably a Bengal poet. One more verse Poet. has been extracted in that anthology under Bhatta Vetāla (iv. 34.3) and another under Rāja-Vetāla (iii. 46.2), probably the same author.

#### (XVII) VYĀSA (KAVIRĀJA).

One stanza is quoted in the S.K. under this name, praising Vatudāsa.2 He is thus likely a Bengal Vvāsa, a Bengal poet of the Sena period. The word Kavi-Poet. rāja may mean a physician.

#### (XIX) SARANA, CIRANTANA-SARANA, SARANADATTA, SARANADEVA.

In the S.K., one verse is extracted under Cirantana-Sarana (s.v.), one under Saranadatta, four under Sarana, a Contemporary Poet of Saranadeva, and 15 under Sarana, They Jayadeva. seem to be varying forms of the same name.

> । पयोधिपरिमाखेष क(?, खेष चरखेषु च। वन्दीन्त्रायात्ररेन्द्रायाां वददासत्तर्यकः॥ "वेतालस्य॥

<sup>&</sup>lt;sup>a</sup> राजवेतालख-A. V. 76.3, Sr. (not in A, except the name.)

<sup>&</sup>lt;sup>2</sup> तत प्राङ्गान्तमधिरोइति कल्पवल्वी चिन्तामगिर्जुठित "पादतले च तस्य। <sup>b</sup>येनिच्चितः सुहृत्सागरपार<sup>६</sup>दूरा विश्वानुरञ्जनपटुर्वेटुदासदेवः॥

<sup>\*</sup> पाणि -A. b वेनेचतः -A. दिखा-Sr. V. 76.5, fol. 202a.

<sup>3</sup> SK.-IV. 1.2 (C. Sarana); III. 2.5 (Saranadatta); I. 69.5, II. 133.2, III. 15.4, III. 54.5 (Faranadeva); I. 61.2-3, I. 87.1, II. 13.2-3, II. 36.4, III. 14, 4-5, III. 16.5, III. 50.5, IV. 50.4, IV. 64.1 V. 1.3-5 (Sarana). MINUTE OF THE PROPERTY AND THE STATE OF THE

No work of this poet has yet been discovered. But from a verse quoted in the S.K., he appears to have flourished in the Sena rule, and another verse by deprecating all the neighbouring kings indirectly lends support to it. The poet's posterior limit is fixed by reference in the Gita-Govinda, I. 4, Saranah släghyo duruha-druteh, i.e., Sarana is best in composing difficult verses. His time probably falls in the 4th quarter of the twelfth century. One sample is given here:—

कामं कामयते न केलि निलनीं ना मोदते कौमुदी निखन्दें इसमीहते म्हगदृशा मालापलीलामि । सीदनेष निश्चासु निःसहतनुर्भीगाभिलाषालसे रङ्गेलाम्यति चेतसि व्रजवधमाधाय मुग्धो हरिः॥

I..61'4, fol. 30b.

#### (XIX) SRĪDHARADĀSA.

The anthologist, son of Vaţudāsa described as Mahāsāmantacuḍāmaṇi (chief officer) and friend of the king Lakṣmaṇasena. Vaṭudāsa must have been a man of high position as verses

1 देवः कुष्यत्तवा विचिन्त्य विनयं प्रीतोस्तु वामादृश्ची व्याञ्डक्षिः प्रमुकीर्त्तिम प्रतिह्नतां वक्तव्यमेवोचितं। सेवाभिर्धदि सेनवंश्चरित्वकादासादनीयाः स्त्रियः सङ्कल्यानुविधायिनः सुरतरस्तत् केन हार्य्योमदः॥ \* मधनि, A., S. III. 54-5, fol-14-16.

जुचोपाद्गौड़नच्चीं जयति विजयते केलिमाचात् कलिद्गां खेतखेदिचितीन्दोक्तपति वितपते सूर्य्यवत् दुर्जनेषु। खेच्छं खेच्छान् विनाग्नं नयति विनयते कामरूपाभिमानं काग्नी भर्त्तीर्व्वकाग्नं चरति विचरते सुर्द्धियो मागधस्य॥ अभ्याप्ति, Sr. माधवस्य, Sr. III. 15:4, fol. 125a. M.M.C.—1-iv-06.

ै तस्त्रासीत् प्रतिराज्ञ द्वतमहासामन्त चूड़ामिया-द्वाद्वा श्रीवटूदास इत्यनुपमप्रमेकपाचं सखा। २०३ मा १ तापं सन्तमसं हरब्रहरहा। हः कीत्तिं दधत् कीसुदीं साद्धादच्चयसुद्धतास्तमयः पूर्णः कलानां निधिः॥ [३॥], Fol. 1b. lauding him by men like Umāpatidhara, the judge Madhu and others are quoted by his son at the end of the anthology (V. 76·1-5).

The anthology is called Sad-ukti-karn-amrta only at two places, viz., at the end of first pravāha and at the very end; otherwise everywhere else (introductory verse 5, and the colophons of the other pravahas) it is called Sukti-karn-amrta. It is said to consist of five pravāhas (currents), 476 vīcis (waves) and 2,380 verses, at five to each vīci (vide the colophon at the end). But the three MSS. I have examined actually contain 474 vicis. 2.363 verses. Two vicis have, in fact, been omitted in the second pravāha, and less than five verses quoted in I. 95 (4), II. 3 (4), II. 129 (3), IV. 21 (4), IV. 68 (3) and V. 25 (4). Each verse ends, mostly, with the author's name; or where not known, with kasyacit or kasy-āpi. In ten verses only the authors' names are wanting, probably dropped at the time of copying. More than four hundred and fifty authors have been named. Towards the end the date of completion is given as Saka 1027, Phalguna 20.1 This does not admit of verification; if a northern expired year, it is equivalent to 11th February, A.D. 1206. The year in the Laksmaņasena era, ras-aika-vimse, is ambiguous; ras-āsītitame would have made it agree with the Saka year. If a mistake for rasaikatumse, it may be the actual regnal year of the king Laksmanasena (1169 and 37 = 1206).

In the colophon at the end of each pravāha, Śrīdharadāsa calls himself Mahā-māṇḍalika or the divisional officer (officer in charge of a Mahāmaṇḍala). The work bears ample testimony to his taste and industry. Nearly two thousand four hundred verses have been compiled from more than four hundred and fifty authors named and others not named; they have been fairly selected and sorted under different subjects; and they bespeak a fairly wide culture with formation of libraries. Without his compilation it would have been impossible to write this sketch of Bengal writers.

#### (XX) SAÑCĀDHARA, SĀÑCĀDHARA, SĀÑCADHARA.

One verse under Sāncadhara is quoted in the S.K., lauding Sāncadhara, a Bengal Poet. He is thus likely a Bengal poet. In the same anthology four more

प्राके सप्तविंग्रत्यधिकभ्रतोपेतदभ्रश्ततेग्ररदां श्रीमञ्ज्यासीन-चितिपस्य रसेकविंग्रे (?) सिवतुर्गत्या पाल्गुगाविंग्रेषु परार्थेइतवे कुतु-कात् श्रीधरदासेनेदं सदुक्तिकर्णान्दतं चक्रे। Fol. 201 a-b.

थो हैनोिक्तिभिराहिते धनवतासुदिप्रकान्तावची गुन्पैर्नक्षमतिः च्रधाकुलिग्रिश्वकेष्ग्रारमम्बर्दितः। गौला जन्ममकन्यभूत हरव (?) त्वदाचामेतां सुधा सन्नी (?) चीं वटदास ग्राम्यतु समे प्रोदामकर्याञ्चरः॥

verses are extracted under Sancadhara and three under Sancadhara1; they are apparently the varying forms of the same name.

#### (XIX) $HAL\bar{A}YUDHA$ .

The youngest and the most distinguished of the three brothers (s.v. Isāna, Pasupati). The Judge Halafew facts known of him and yudha, a writer family are taken almost exclusively from on rituals. his Brāhmana-sarvesva. His father born in the line of Vātsya muni (Introd. verse 4), married Ujjalā (v. 8.), and became dharmm-ādhyakṣa or judge (v. 5). Halayudha was born of them (vv. 9, 10), and had two elder brothers, Isana and Pasupati (vv 24, 43). Halāyudha in his early years was appointed Rāja-pandita, (v. 12), in youth raised by Laksmanasena to the post of Mahāmātya (vv. 10, 12), and in his mature age confirmed as senior judge, Mahādharmm-ādhikāra or Mahādharmm-ādhyakṣya (v. 12, and the colophons of the sections).

Before taking up this work he had written the Mimāmsāsarvvasva, Vaisnava-sarvvasva, Saiva-sarvvasva and Pandita-sarvvasva (v. 19). He composed the Brāhmaņa-sarvvasva because the Brāhmaņas in Rāḍha and Vārendra did not know the Vedic rites. He dealt with the rites laid down in the Vajasaneyisamhitā, Kānva-sākhā. In the Cat. Catalog. two more works of his are named—Dvija-nayana, and a tikā on the Srāddhapaddhati. Excepting the Brāhmana-sarvvasva no other work of his has yet been found. In the S.K. three verses are quoted under Halāyudha. He is to be differentiated from Halāyudha of the Purana-sarvvasva (composed in A.D. 1475), and of the Dharmma-viveka (called therein Mahā-kavi, H. P. Šāstri's "Notices," I. pp. 195-6).

<sup>1</sup> S.K.-I. 212-5 (Sancādhara); II. 344-5, V. 54-5, V. 76-2 (Sancādhara).

<sup>&</sup>lt;sup>°</sup> मीमांसासर्व्यं वैषावसर्व्यसमञ्जत प्रोवसर्व्यसम्। पिखतसर्व्यसमसौ सर्व्यसं सर्वधीरायाम् ॥ १८ ॥

<sup>&</sup>lt;sup>3</sup> तच च कलो खायः प्राचीत्साच्यद्वादीनामन्यत्वात उत्नलपास्वाता-दिभिवेदाध्ययनमानं क्रियते, राङ्गीयवारेन्द्रेन्त्वध्ययनं विना क्रियदेकवेदा-र्थस्य कमीमिमांसादारेग यज्ञेति कर्त्तेयताविचारः क्रियते...।...किन्त यथाविध्यथयनपूर्वेके वेदार्थज्ञाने ! रतैन्तु राड़ीयवारेन्द्रकौरनुचिताचार एव नेवनः नियते । एवं घोभयोर्ण ग्रह्मार्थतो वेदज्ञानं नास्येव । ..... तदेवं व्यवस्थिते प्रास्त्रार्थे छत्स् वेदाध्ययनसमार्थानां राङीयवारेन्द्रक-दिजादीनां कान्वशाखिवाजसनेयिनां कमानिष्ठानार्धं ... ।

<sup>4</sup> S.K.-I. 30:5, I. 63:4; V. 72:3. They have been quoted by Aufrecht, Z.D.M.G., 36, 529-30.

# 23. The Proportion between the Sexes in Helopeltis theivora, Waterhouse.—By H. H. Mann, D.Sc.

The study of the relative proportion of males and females among various classes of animals, and especially among insects, has led to comparatively important conclusions, and a good deal of information has been gathered in recent years on the subject. I am not aware, however, that any member of the Heteroptera has been examined in this sense either by breeding or by the numbering of caught specimens. The fact that the Capsid bug, Helopeltis theirora, is a serious enemy of the tea-plant, and the kindness and enthusiasm of an Assam planter (Mr. J. J. Smith of Behalli, Assam), have enabled me to continue systematic and daily observations of the relative proportion of the sexes now for over three years, and the figures thus obtained form the substance of the

present paper.

Helopeltis theivora, Waterhouse, the so-called 'mosquito blight' of tea, is the most serious insect-enemy of the tea-planter. It passes all stages of its life on the tea-plant, and at every stage it feeds on the youngest leaves and shoots by inserting the rostrum into the substance of the plant, and sucking out the juice. As a result, the leaves become covered with minute irregularly round patches of brown withered tissue, the growth of the shoot is stopped, and the young leaves (the commercial product) cease to be produced. An examination of the size of the spots sucked out by the insects indicates, to an experienced observer, very closely the age of the insect which has attacked the plant; with adult insects the patches measure 2 to 3 millimeters in diameter, while they are usually on the outer parts of the bushes on older leaves than those generally used by the larvæ.

The sexes are thus described by Distant (in Blandford's "Fau-

na of British India," Heteroptera, Vol. II, pp. 440-441):-

"Male.—Head and pronotum shining black, much resembling "the same sex of the preceding species (Helopeltis antonii), but

"with the scatellar horn more curved backward at apex.

"Female.—Black, pronotum bright, shining, stramineous, or "ochraceous, with a subapical transverse fascia and the basal area "shining black; scutellum ochraceous more or less suffused with "black, the horn long, black, piceous at apex; antennæ dark-brown, basal joint paler, yellowish at base; femora dark brown, "mottled with ochraceous, and with a distinct pale annulation near "base; tibiæ ochraceous, speckled with fuscous; head beneath "with a lateral luteous fascia on each side, more obscurely seen "above; abdomen pale, creamy-ochraceous, the apical third black." "Length 6 to 7 millim."

To this description one can add the following additional information with regard to the male: The antenne are shining, piceous, ochraceous at the base. The pronotum is shining black with a patch of ochraceous differing considerably in size in different.

specimens, but always much smaller than with the female. The insect, as a whole, appears distinctly smaller than the female.

It will be seen that there is absolutely no difficulty even at first sight in distinguishing the sexes. The points which settle

the sex to a casual observer, are:-

1. The size of the orange spot on the pronotum and scutellum. In the female it is much bigger than in the male, and in fact in the latter it is often hardly to be seen.

2. The shape of the abdomen, which is always larger and

stouter in the female.

3. The size of the insect, the female being always distinctly bigger in every respect.

4. The presence of the ovipositor in the female.

It is obvious that the examination of the many thousands of samples could not be made by myself personally, but the ease of distinction prevents the possibility of any material error, and I

have checked personally a very large number.

The method adopted in the present investigation was to employ boys and girls to catch the insects practically day by day throughout the year. In the two places from which results are here reported, there have been about 40 children employed for this purpose throughout almost the whole of the past three years. The catching is not an easy business, and it is usually some months before the children get expert at the work. Hence the earlier results are probably not quite so reliable as the later ones. But once they have become accustomed to the way of catching the insects, it is rare that an adult, male or female, escapes. They are about equally difficult to catch, and I have convinced myself that no material error is introduced on this account. They are found most abundantly in the early morning and late afternoon. During the hotter part of the day, as a rule, the insects hide away.

The only error which may seriously affect the figures, is the fact that the numbers were, on the whole, declining during the three years, owing to the measures taken against the insect. It is a factor which might influence the relative numbers of the sexes.

in a manner of which we know nothing.

The two sites for collection were situated at Behalli and Bedetti, places about three miles apart in the Darrang district of Assam. Both of these are tea-gardens in which much of the tea was seriously attacked by the Helopeltis. It should be noted that the insect is present only in small numbers during the early part of the year, reaching a minimum in February, March and April. In June it commences rapidly to increase in numbers, and during July, August, September, October, and November it is exceedingly numerous, while in December the number usually, though not always, rapidly drops. I give a special table of rainfall each month at Behalli, in order that its distribution relative to rain may be ascertained.

If the three years are taken together, the figures seem to

indicate:-

1. That the males are always present in much smaller numbers than the females.

2. That the more adverse the conditions, the less is usually the predominance of females. This is indicated very clearly in the Behalli results for July, August, September and October in the three several years, when the attack was at its height.

	1903.		1904.		1905.	
	Number of insects.	Males °/, of Females.	Number of insects.	Males °/o of Females.	Number of insects.	Males °/°, of Females
July August	20,446 19,503	14·2 10·6	12,491 13,685	38·6 31·9	6,343 6,089	52·0 63·4
September October	13,742 13,668	11·9 10·6	11,895	34·0 54·0	9,360 8,328	49·2 40·1

In the first year the efforts at keeping the insects in check on these plots were hardly successful; in the second they were more so; while in the third the insects were never able to get out of hand. The same story is told by the figures given for the second

place of observation (Bedetti).

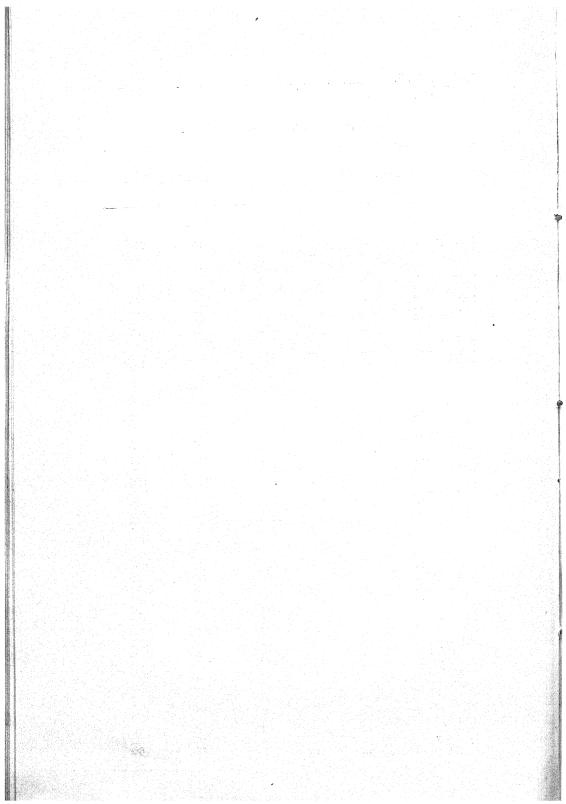
In explanation of the fact of the sudden drop in the number of insects in January or February in each year, it should be noted that it is at this season pruning is carried out, and this results in the removal and destruction of many millions of eggs from the plants. Hence the drop in numbers is not entirely a seasonal variation.

Behalli,—April, 1903—March, 1906.

					Males as	Rainfall :	No. of
	Date.		Male.	Female.	°/o of Females.	Inches.	Rainy days.
					1903.		Early to control to the control of t
April			131	685	19.1		
May			473	1,710	27.7		4 2 2
June			856	4,174	20.5		
July	:		2,565	18,081	14.2	Not	Not
August	•••		1,869	17,634	10.6		
September			1,462	12,280	11.9	noted	noted
October			1,308	12,360	10.6		
November			3,393	14,188	23 9	Tagain the second	
December			6,177	16,300	37.9		
					1904.		
			10	700	0.0	10	
January		•••	13	590	2.2	43	3
February	•••	•••	140	638	21.9	1.97	6
March	•••	•••	81	1,324	6.1	2.01	9
April	•••		381	3,226	11.8	not noted	
May	•••	•••	910	5,044	18.0	17.28	27
June	•••	•••	2,137	5,557	38.5	16.68	16
July	•••		3,477	9,014	38 6	16.91	23
August	•••		3,312	10,373	31.9	29.12	26
September	•••		3,016	8,879	34 0	8.15	16
October			5,397	9,996	54 0	4.21	10
November			9,180	18,803	48.8	1.43	9
December		•••	2.720	7,229	37 6	.12	1
					1905.		
January			399	1,118	35.7	•21	3
February	•••	•••	17	51	33.3	.35	3
March		•••	56	140	40.0	3.95	11
April			98	262	37.4	11.84	19
May	•••	•••	323	459	70 4	6.98	12
June			955	1534	62.3	16 08	20
July		•••	2,171	4,172	52.0	14.81	20
August		•••	1,740	4,349	63 4	32.12	27
September	•••		3,087	6,273	49 2	8.20	17
October		•••	2,385	5.943	40 1	3 12	8
November			8,340	9,341	35.7	2.89	7
December			3,491	10,623	32.9	·88	7
					1906,		
January			424	2,402	17.6	-67	3
February			101	931	108	2 21	8
March			503	2,710	18.5	2.58	8

Bedetti, -January, 1903-March, 1906.

	D	ate.		Male.	Female.	Males as %% of Females.
					1903.	
<b>~</b>				20	_	
January	•••	***		20	27	74.1
February	•••	•••		48	40	120.0
March	•••	•••	•••	60	101	59.4
April	•••	•••	•••	25	81	30.8
Мау	•••	••	•••	11	40	27.5
June	•••			46	259	17.7
July	•••	•••		116	677	17.1
August		••	•••	132	1,506	87
September	***	•••		202	2.069	9.8
October	•••	•••		631	2,585	24.4
November		•••		975	4,132	23.6
December	•••	•••	•••	882	5,619	15.7
					1904.	
January				13	635	20.5
February		•••	***	18	194	9.3
March		•••	•••	4	148	2.7
April		•••	•••	0		
	•••	•••	•••		64	6.4
May	•••	• • •	***	147	94	6.4
Inne	•••	•••		147	368	39.9
July	•••	•••	***	395	1,091	36.2
August	••• <u> </u>	•••		451	1,407	32.1
		•••	•••	670	2,451	27.3
October	•••	***	•••	865	2,498	34.6
	•••	•••	•••	970	2,432	38.8
December	•••	•••		566	1,€33	34.7
					1905.	
fanuary				48	94	51.1
February	•••			ī	55	18.2
March		***		ĩ	ĭ	100
April				õ	ō	100
Иау			•	5	8	62.5
Tune			•••	20	30	66.7
July	•••			67	147	45.6
August			•••	35	97	36 1
September	•••	•••	•••	30	93	32.3
October	•••	•••	•••	87		
November	•••		•••		167	52·1
			•••	49	245	20.0
December	•••	•	•••	13	149	8.7
		ediativi.			1906.	
anuary			9 k	0	6	
	经付款 网络大龙属 经收益		The second of A Section 1 and A section 1	医牙囊 医多类菌属 医多种原体 经基础		• • •
Pebruary			1	0	6	



24. Preliminary Note on the Ruts of Calcutta.—By W. C. Hossack, M.D., District Medical Officer, Calcutta.

The important part which, according to most authorities, the parasites of the rat play in the propagation of plague, has rendered it a matter of considerable practical importance to ascertain definitely what are the chief varieties of rats found in Calcutta, and their relative frequence. Thanks to rewards for the destruction of rats, it has been possible to obtain a very large amount of material, and, by working on large series, to collect valuable information as to the variations normally found in the different species and varieties. The variations caused by immaturity are particularly interesting and have a very practical bearing on the identification of species, but the subject is too technical to be more than indicated here. There are three species of rat commonly found in Calcutta, and a fourth, though quite rare, is very striking from its very large size, viz., the Lesser or Northeru India Bandicoot.

#### KEY TO RATS OF CALCUTTA.

- A. Long-tailed species (tail 115-130 per cent. of length of head and body).
  - (1) Mus rattus alexandrinus.—Medium sized or small. Ears long and wide and standing up from head, which is long and pointed. Slender body, feet long, slender and dark, head long and pointed. Median pads of hind foot cordiform and the external one generally showing a small extra tubercle. The tail is uniformly dark. This is a house rat; it corresponds to the Black Rat of Europe.—Mammae, 2 pectoral, 3 inguinal.
- B. Short or Medium Tailed.
  - (2) Mus decumanus.—The Brown Rat of Europe. Heavy-bodied, large rat with heavy tail, the length of which is 90 per cent. of length of head and body. The tail is distinctive, being white or distinctly lighter below. The feet are large, heavy and flesh-coloured, with cordiform median pads on hind foot like Mus alexandrinus. Jowl heavy and broad. No long piles or bristles on back, though longer hairs are present. M. decumunus does not bristle or spit when caged. The molars are tubercular. Eyes small and ears round and short.—Mammae, 3 pectoral, 3 inguinal.

(3) Nesokia bengalensis (Indian Mole Rat)—Heavy-bodied and of moderate size, like asmall decumanus but has long piles or bristles on its back. The tail is only about 80 per cent. of the length of the head and body, and is uniformly dark; it tends to be rather attenuated and pointed at the end. Pads of the hind foot tend to be small and circular, not cordiform. The proximo-

external is very small, and in 2 per cent of specimens is wanting. The feet and nose are not flesh-coloured but rather purplish. The fur is very thin, bristly and harsh, and in drowned specimens the half-naked bristly, piglike appearance is marked. When caged N. benyulensis bristles, spits and gnashes its teeth. Molars instead of tubercles show transverse lamina. Burrowing, stable and grain-shop rat.—Mammae, 4 pectoral, 4 inguinal,

but very variable.

(4) Nesokia nemorivagus (Lesser Bandicoot).—An extremely large and heavy-bodied rat. It may be confused with very large specimens of M. decumanus, but has a deep, narrow, greyhound-like muzzle with very large ears. On the back are very long piles 5-7 c.m., long. The feet are black and very large, with pads as in N. bengatensis. The tail is nearly equal to the head and body and is uniformly dark, more finely ringed than in M. decumanus. It has the same savage demeanour when caged as N. bengalensis. Molars with transverse laminæ. It is a burrowing, grain-storing rat, but is captured in houses.

It is as well here to mention Crocidura cærulea, the Grey Musk Shrew, commonly known as the musk rat. This is not a rat at all but is one of the Insectivora, being closely allied to the moles and the shrews. It feeds mainly on cockroaches. It is very common in Calcutta, but in many thousands of trapped rats I have only come across a single specimen.

Under Mus a exandrinus I include all rats in Calcutta of the rattus type. My specimens certainly include M. rufescens, but I have still got to work them out. They show an extreme range of variation in colour from almost black with dark belly to pale cinnamon or brown with white belly, but as every gradation is shown I am at present inclined to think they are all the one rat. Breeding

experiments will be required to settle the problem.1

In this paper all I aim at is to give a rough idea of the rats of Calcutta, and the external characteristics by which they may be distinguished by one who is not an expert. Hence I have said nothing about colour, as it is an extremely variable characteristic and a most unreliable means of differentiation. In the live rat, the colour seems more or less the same in all of them, for even the most sharply defined white belly is almost unnoticeable unless the rat is sitting up at its toilet. All may be described as brown, but in alexandrinus the brown may be a light yellowish-brown, and in the two Nesokias it tends to be a cold greyish-brown with no

<sup>1</sup> Since this was written I have secured two specimens which were black and one which was almost quite white though the eyes were black, examples of partial melanism and albinism respectively. I have almost completed my examination of rattus series, and find that no distinction can be drawn between rufescens and alexandrinus, as they intergrade completely. The smaller specimens which agree with the description of rufescens are simply young specimens of alexandrinus. May 16th, 1906.

rufous tendency. Mus rattus need never be mistaken, as even when the long tail is mutilated, as it frequently is, the very large prominent eyes and the large outstanding ears are quite characteristic. Apart from its size, the bicoloured tail of decumanus will nearly always distinguish it. If the lower surface is only a very little lighter, then a glance at the large flesh-coloured feet will settle the species, and an examination of the pads shows them large and cordiform or heartshaped just as in Mus rattus. The purplish feet and snout and the shorter much-tapered tail make the recognition of Nesokia bengalensis also easy. The long, black bristles, 4-5 c.m. long, are unmistakable. The foot pads will settle any doubt, being small, rounded and with the proximo external almost absent.

The large black feet and slender muzzle at once separate the Bandicoot from the largest brown rat. The following is a summary of the principal measurements in centimetres. To get the length of head and body it is important to see that the rat is straightened out, particularly if riyor mortis is present. The centre of the anus is taken as the junction of body and tail. Calipers may be used, but a steel tape is very convenient, and, considering the normal variations, sufficiently accurate. The curves of the body should not be followed. In measuring the hind foot the claws should be excluded. The ear should be measured from the external root of the conch. My own have been taken from the lower edge of the meature.

#### Average Measurements in Centimetres.

	Length of head and body.	Length of Tail.	Length of Hind Foot.	Length of Ear.
M. alexandrinus	16	20	3.3	21
M. decumanus	22 6	20 2	4.1	1 97
N. bengalensis	18.2	. 14.8	3.2	1.94
N. nemorivagus	27	26	5.2	2.8

Relative Frequency.—Figures in this instance tend to be rather unsatisfactory owing to two causes. In the first place pressure of plague work made it impossible for me to make accurate recorded counts of any but a small proportion of the rats I examined. In the second place it was only late in my investigation that I could accurately distinguish the different varieties. My own recorded counts total 648. My colleague, Dr. Crake, counted 1,000, but only distinguished long-tailed from other rats, making the former 11.2 per cent.

#### Relative Frequency of Rats in Calcutta.

	1	The state of the s	Andrew Comment of the
N. bengalensis. $60^{\circ}/_{\circ}$	M. decumanus. 26°/°	M. alexandrinus. 14°/	N. nemorivagus. Rare

I have collected 9 specimens of Bandiccot, but these were out of a series of over 2,000 examined, and three of these were sent to me from other districts than my own.

The frequency of N. bengalensis is certainly overstated in the above table, and the explanation is that my most assiduous collector worked in a quarter where grain godowns abound. From observations in other districts, I should say that taken all over the city Nesokia bengalensis and M. decumanus are about equally frequent.

I have already generally indicated the reason for publishing this abstract. The preparation of the plates which are to accompany the full paper will take so long that it seems advisable not to wait indefinitely but to publish this rough summary at once in the hope that it may be of some use to those who are working at the connection between rats and plague.

25. Notes on the Freshwater Fauna of India. No. V.—Some Animals found associated with Spongilla carteri in Calcuttu.— By N. Annandale, D.Sc., C.M.Z.S. (With one plate.)

Several Insects and Crustacea are known to live temporarily or permanently in the canals of Ephydatia fluviatilis in Europe; but very little has been published regarding the incolæ or commensals of the tropical Freshwater Sponges. During the past winter and spring I have examined in Calcutta a large number of specimens of the common Spongilla carteri, in order to discover what animals live in association with it. Such animals prove to be numerous and of very varied kinds. Several species, of which I have little to say, may be noticed briefly. A small fish of the genus Gobius (which I will describe later) lays its eggs in depressions on the surface of the Sponge towards the end of the cold weather, and several of the higher Crustacea probably take shelter temporarily in the same position. To descend in the animal scale, I have found considerable numbers of at least one species of Planarian actually in the interior of the Sponge. These, however, I only found in this position after the rise in temperature, which heralds the commencement of the hot season, had caused the cells of the organism to perish, leaving, in many cases, a fairly coherent skeleton attached to the roots of floating waterplants which retained the gemmules in its meshwork. This skeleton also gave shelter to numerous Insect larva, which may have been an attraction to the Planarians, although most of them were too big to fall an easy prey to the latter. In Sponges of the species I have seen, at all times during winter and spring, minute Nematodes of the family Anguillulidæ, while in one, which I dissected in February, I found a larva of a Gordiid worm, lying close to the external surface in the substance of the Sponge. It was in its first stage, and its presence was probably connected with other inhabitants of its host; for larvæ of the kind are known to attack Chironomid larvæ, through the integument of which they make their way. In another specimen, at the beginning of April, I came across a worm of the genus Dero, which, although fully adult, was probably a chance guest also. It is evident that a loose, porous mass like the skeleton of Spongilla carteri offers an attractive retreat to any animal of sufficiently small girth and of retiring habits which may chance to find it.

There are several Insects and a Worm, however, whose connection with the Sponge is of a more settled though not a permanent nature. I will first deal with the Worm, of which a

description follows.

<sup>1</sup> Rai Bahadur R. B. Sanyal in his excellent little book Hours with Nature says that in some parts of Bengal Freshwater sponges are known as "shrimps' nets," because shrimps take shelter in them. The same naturalist tells me that a number of young snakes (Cerberus rhyncops) born in his aquarium in Calcutta, took shelter, the day after birth, in the natural canals of a sponge at the bottom of the tank.

CHÆTOGASTER SPONGILLÆ, Sp. nov.

Diagnosis:-

A large sucker surrounding the mouth; no posterior sucker; segments few; body transparent, colourless; integument irregularly, transversely striated on the body, with longitudinal rows of minute, irregular tubercles on the "head"; chete short, feeble, retractile, arranged in 6 or 7 pairs of bundles along the ventral surface, with a narrow, flattened area between them, with 4 or 5 chætæ in each bundle, those of the second segment twice as long as the others; no cheetee on the 3rd-6th segments; total length of an individual which is not budding about 1 mm. Walls of pharynx comparatively thin; esophagus as long as pharynx or longer, undivided, covered with glandular cells;

intestine short. An otocyst in the "brain."

This Worm resembles Chætogaster bengalensis in the possession of the otocyst, which is a relatively large, globular, transparent cyst. It differs, however, from the species previously described from Calcutta in the comparatively thin walls of its pharynx, its undivided esophagus, and the lack of a posterior sucker—the last a character which may be considered by authorities on the group to be of generic value. It is not improbable that both Chatouaster benguleusis and Ch. spongillæ will be finally separated from the European and American species of the genus under some new generic name or names: but their affinities are shown to lie with this genus by the following important characters:—(1) The double ventral nerve cord; (2) the discrete nature of the ganglia, the arrangement of which does not correspond with the segmentation of the body; (3) the absence of dorsal setæ and the arrangement of those on the ventral surface, which are present only on segment II and on the segments posterior to V; (4) the presence of uncinate setæ only.

In specimens of Spongilla carteri which had borne down the floating plants to which they were attached and had been partially smothered in the mud at the bottom of the pond, and in specimens of Spongilla decipiens which were already dying and producing large numbers of gemmules, I found Chætogaster spongillæ abundant during February. It frequented only those parts of the Sponge which had been killed or were dying, its food apparently consisting of the organic débris left by their decay. Many thousands of individuals were found in such parts of the sponge, while

the healthy, growing parts were quite free of them.

Lately (April, 1906) I have found Chætogaster spongillæ, still sexually immature, on the external surface of colonies of Plumatella repens var. emarginata, which were growing on submerged stones and water-plants in a pond in the Calcutta Zoological Gardens. Accompanying it were Naidomorph worms of several genera, (including Dero, Pristina and Pterostylarides), numerous Rotifers, and also a third species which must be placed provision-

<sup>1</sup> For descriptions and figures of many of the Indian species of this family see A. G. Bourne, in Quart. Journ. Micr. Sci. XXXII, 1891, p. 335.

ally in the genus Chætogaster. The last (Fig. 1B) is remarkable for possessing in the brain a sensory organ which is densely pigmented and probably functions as an eye. The buccal cavity in this species is very deep, the muscular pharynx short; the total length is from 2 to 3 mm., and there are not more than eight pairs of setigerous bundles, the setæ resembling those of Chætogaster bengalensis in arrangement, but being fewer in each bundle. Except those just behind the mouth, they are not retractile. The vascular plexus is better developed than in the two other forms I have examined, and extends forwards to the base of the buccal cavity. There is no nephridium near the second bundle, but that which opens at the base of the third bundle is larger than those posterior to it. Although the sexual organs are quite immature, the clitellum is well developed.

The food of this form with an eye consists, at any rate in part, of the Protozoa (Vorticella, Epistylis, Stentor, etc.) which are abundant on the surface of the zoarium of the Polyzoon. The worm hooks itself along with the aid of its setæ, the first bundle playing no part in progression but being used to seize and retain living prey. The ventral surface is closely applied to some more or less flat surface during progression, and the movements, in spite of the existence and use of the setæ, recall those of a Planarian. Unlike the species which attaches itself to snails in the Calcutta "tanks"—I have not been able to find specimens this winter—this Eyed Chætogaster can progress through the water without support, by lateral and vertical contortions of its body; but it prefers as a rule to crawl.

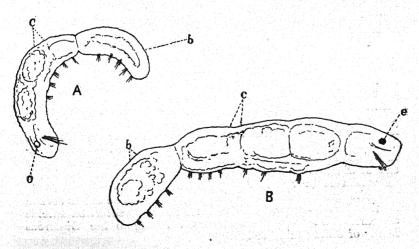


Fig. 1. Two species of Chatogaster from Plumatella. April.

A = Ch. spongilla. B = Ch., sp. (Both × about 35.)

B = bud. C = clitellum; e = eye; o = otocyst. Both specimens are in a state of contraction.

Spongilla carteri produces comparatively few gemmules in Calcutta, where the Freshwater Sponges are not desicated during the hot weather as they are in Bombay but apparently perish owing to the rise in temperature which takes place at the end of March or the beginning of April. Moreover, these few gemmules are formed chiefly towards the interior of the Sponge, which may reach a diameter of at least six inches, and are mostly retained in the meshwork of the skeleton and germinate in situ on the return of cooler weather. A few, however, are set free and serve to aid in the dispersal of the species. I found gemmules of this form fairly abundant on the surface of a marsh in Chota Nagpur at the beginning of March, and they may occasionally be taken among the bacterial scum which appears on the water of the Calcutta "tanks" a little later in the year. A large proportion of the gemmules of Spongilla decipiens are, on the other hand, produced, so to speak, for dispersal. The Sponge is a thin, incrusting form, which becomes full of gemmules, and the gemmules are packed together in masses of a peculiar pneumatic tissue which gives them very great buoyancy. I have no doubt that Chætogaster spongillæ (which I have only found in half-dead sponges in an unfavourable position for the germination of the gemmules) plays an important part in liberating the gemmules of both species, both by eating the débris which retains them in position, and by its movements as it crawls along the skeleton. Its mode of progression differs from that of Chætogaster bengalensis and consists mainly in wriggling movements of the body assisted by the retractile chata. which, owing to their fineness, are well adapted for grappling with the spicules of the Sponge. A large number of living organisms, however minute, moving in this way must aid in dislodging freely movable bodies such as gemmules in the meshwork of a Sponge skeleton.

Oheetogaster spongillæ reproduces its kind prolifically by budding and subsequent fission; but I have not found individuals which were sexually mature, notwithstanding the fact that the clitellum, as in Chætogaster bengalensis, is already visible in young individuals newly separated from a budding parent. There seems to be a tendency, however, for the latter species to desert its host at the beginning of the hot weather, and it is not improbable that it becomes sexually mature after doing so, and deposits eggs at the bottom which lie dormant until the temperature sinks again. The clitellum becomes more conspicuous at the end of winter; but I have not been able to detect the gonads even in specimens in which this change had occurred.

The Insects which inhabit *Spongilla carteri* belong to several species; but as they are all immature I cannot venture on specific determinations. The most numerous belong to the Dipterous

family of Chironomidæ or Midges.

CHIRONOMUS SP. (larva).

One type of larva (possibly including several allied species)

commonly found in the Sponge agrees in almost all respects with the larvæ of European Midges of the genus Chironomus. This type (Fig. 1B) has an elongated body with the segments approximately similar inter se. The head, which is small, is hard and of a brownish colour. There are two eyes, the lower of which is double, on each side, and a short tentacle which is not retractile. The jaws, which are formed for biting, and the other mouth-parts exactly resemble those of European species. On the first segment of the body there is a pair of extremely short, stout, separate appendages, which are furnished at their free extremity with a bundle of coarse, curved spines. A somewhat similar, but longer pair of appendages occurs at the other extremity of the body, and behind them, at the very tip of the abdomen, is a pair of blunt, sack-like processes with a small bunch of hairs on a slight projection at their common base above. The last abdominal segment also bears on the dorsal surface (in some cases on a hump or prominence, a bunch of much thicker and longer bristles, which are connected with a special muscle. A few fine, scattered hairs occur on the sides of the body. There are no processes on the ventral surface of the abdomen. (The last is a feature in which almost all the larvæ of Chironomus I have examined in India differ from those of the European species, in which these ventral processes are conspicuous.) This spongehaunting Chironomus larva differs from the one which feeds on Hydra in at least four points: (1) in the extreme shortness of the anterior limbs; (2) in the structure of the eyes, of which there is a single pair in the former; (3) in being considerably larger; and (4) in colour. Whereas the free-living species is nearly colourless, that of the form at present under consideration is of a deep bloodred hue. This colour, which is developed fully only in older individuals, has been shown to be due in other larvæ of the genus not to the presence of ordinary pigment but to the production of hæmoglobin, by means of which the larva breathes, its respiratory system being altogether rudimentary. The smaller size of the free-living species may render a highly specialized device for oxygenating the blood unnecessary.

As I have said, I am not sure that several closely allied species of *Chironomus* larvæ do not haunt the Sponge; but even if this is the case, they are as similar in their habits as in their structure, and they may be regarded from the standpoint of bionomics as a single form. In many cases it is evident that they and the Sponge grow up together, and large numbers of them may be found in the substance of their host at all times during winter and spring. The evil odour of the Sponge is apparently not offensive to them, and they are rather more numerous in the living Sponge, which has this odour, than in the dead skeleton from which the smell has departed. As young larvæ, they build short protecting tubes of a parchment-like substance, which is secreted by their salivary glands. It appears, unlike the threads of which the tube of the common European *Chironomus* larvæ is made, to be given out in an amorphous condition, and is probably moulded into shape by

the larva. The Sponge grows very rapidly and the larva is soon in danger of being engulphed in its substance. The tube is therefore lengthened, in order to avoid this catastrophe and to secure communication with the exterior. The process may continue until the tube is over an inch in length, its diameter increasing with the growth of its maker. The internal aperture becomes practically closed by the pressure of the growing substance of the Sponge, but the external orifice remains open. Very often the Sponge dies before the larva has reached the term of its larval life; but this appears to make no difference to the latter, which lives on in its tube. The entrance to the tube may project some little distance beyond the worn surface of the larva's dead host.

The larva does not eat the Sponge but feeds on minute animals which it catches by means of the curved bristles on its anterior limbs. In capturing its prey it stretches the fore part of its body out of the entrance of its tube, to the interior of which it clings by means of its hind limbs and of the bristles at the posterior extremity of the abdomen. The tube is covered with scattered spicules of the Sponge; but I have been unable to ascertain whether the larva fastens them there or whether they belong to the substance of the host. Their clean condition, as they are apparently free from living cells or the remains of dead ones, would suggest that the larva plucks them out from the sponge and fixes them in position; but the tube is in extremely intimate contact with the substance of the sponge, and can with difficulty be separated from it.

At first sight it would appear that the presence of a foreign body such as the tube of this Chironomus larva in the interior of a living organism would be necessarily harmful to that organism; but the fact that a Sponge has no definite organs or living tissues renders a theory of the kind improbable. Study of the facts shows that the tubes of the larva are, on the contrary, distinctly beneficial to the Sponge, especially when they are present in considerable numbers. Spongilla carteri is very fragile in life, but, as has been noted above, the skeleton of specimens which have not grown sufficiently large 1 to bear down the plants that support them, remains coherent after the death of the cells of the Sponge, serving as a nest for the gemmules which it retains. The tubes of the Chironomus larva aid very greatly in preserving this coherence by binding the skeleton together, as the substance out of which they are formed is tough and persistent. The larva. therefore, would appear to be beneficial to the Sponge in a way very different from that in which Chætogaster spongillæ aids in maintaining the survival of the species; but whereas the latter has only been found in Sponges which had sunk to the bottom, the former occurs chiefly in those which are floating near the surface.

The larva does not pupate in the Sponge.

Col. Alcock has drawn my attention to certain instances of

l Sometimes they sink not because of their own weight but because the leaves of the supporting plants are eaten by insects.

See Alcock in Ann. Mag. Nat. Hist. (6) X, 1892, p. 208.

commensalism between marine Sponges and Hydrozoa, which are to some extent parallel to this between a tubicolous larva and Spongilla carteri, the chitinous exoskeleton of the Coelenterates playing, however, a far more important part in the formation of the sponge body than do the tubes of the Chironomid. The case of the latter and its host should perhaps be described as one of incipient commensalism. The considerable variation noted in the habits of allied Indian larvæ would support this view. A very similar larva forms its tube indifferently either in the substance of a brackish-water Sponge or among the densely packed zoœcia of a Polyzoon; a third is common on the external surface of the zoarium of Plumatella repens, covering its tube with sand-grains; while a fourth lives independently and fastens to its retreat Protozoa and other small animals on which it-feeds. The habits of all these species tend, in greater or less degree, towards commensalism, and probably the one at present under consideration has gone further than the others in this respect.

## TANYPUS sp. (larva).

Another Chironomid larva (Fig. 2B) commonly found in the substance of Spongilla curteri so closely resembles those of the European members of the genus Tunypus that I think there can be little doubt that this is the genus to which it belongs. It differs from the larva of Chironomus in the following characters: (1) the head, instead of being subspherical in shape is long, rather narrow, and flattened above, having a somewhat "snaky" appearance; (2) the antennæ can be completely retracted into cavities in the side of the head; (3) the fore limbs are joined together at the base for a considerable proportion of their length; (4) both they and the hind limbs can be entirely retracted, the latter being withdrawn into separate sheaths while the fore limbs disappear into a common tube which depends from the ventral surface of the first segment of the body some little distance behind the head. The claws attached to the hind limbs are large in this sponge-haunting form, which I have found both in winter and in spring, and there is a single, undivided eye on each side. This larva does not form a tube but forces its way through the substance of the Sponge, pulling itself along by means of its conjoined fore limbs. When alarmed it withdraws its limbs and antennæ into their eases and remains still, as if it were dead Probably it does not feed on the Sponge, but, like its ally found in the same organism, on minute animals which it catches by means of the hooks on its fore limbs. This form is commoner in dead Sponges than is the Chironomus, and I have taken a species probably identical with it living free among water-weeds. It is colourless and apparently breathes by transmission of oxygen through the general surface of its body, which is covered with a fine, soft integument It does not grow so big as the Chironomus larva. I have sometimes found a considerable number of

individuals close together in a natural cavity of the Sponge. The pupa lives free in the water.

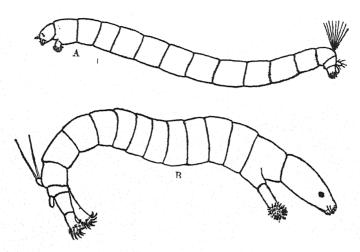


Fig. 2. Chironomid Larvæ from S. carteri.  $A = Chironomis \text{ sp.,} \times 10.$   $B = Tanypus \text{ sp.,} \times 20.$ 

A small Beetle larva (Pl. I, Fig. 3) occurs somewhat sparingly in the Sponge, both in winter and in spring. Its mouth-parts prove that it is a predaceous form; but I have been unable to identify it. A remarkable feature is the forked appendage at the extremity of the abdomen. This structure is jointed and bears at the extremity of each of its two branches a powerful hooked claw. The object of the claw is to enable the larva to cling tightly to any object, and the end of the abdomen is generally bent beneath the rest of the body like the "tail" of a lobster. If the larva is dislodged, however, it straightens itself and moves along by means of its legs, with a curious jerky gait. I have usually found it near the centre or the base of the Sponge.

# SISYRA sp. (larva). Pl. I, Fig. 2.

One of the most interesting Insects found in the Sponge is a Neuropterous larva very closely resembling that of the European Sisyra fuscata, which is found during summer in the canals of Ephydatia fuviatilis. Indeed, I cannot find any definite character whereby the Indian form could be distinguished from the European; but possibly the eyes are better developed in the former. The Indian larva is a small, whitish insect with a flattened, almost triangular abdomen and a comparatively narrow thorax and head. The abdomen, as in the European form, bears on its ventral surface seven pairs of jointed appendages which apparently function as gills. There is a pair of very fine, stiff,

bristle-like antennæ on the head, and the eyes are large and dark. Each consists of a number of simple ocelli situated close together on a small circular area. The mouth-parts resemble those of the European form, but may differ slightly in details. They consist of a pair of tubular structures which closely resemble the antennæ in outward appearance, except that they are not jointed. Each is really double. Their function is evidently to obtain nourishment by suction; but it is not known whether the European form feeds on the Sponge or on other animals or plants, and I have no observations on this point to offer as regards the Indian larva.

I have only found this larva during the winter months. Unlike its European congener, it is not confined to the natural cavities of the Sponge; for it forces its way into the actual substance of its host.

Its occurrence during summer in Europe and in winter in the tropics, is what might be expected from the analogy of other forms in the "tank" fauna. In Europe winter is the time of hardship for aquatic animals, owing to scarcity of food and the formation of ice; whereas in Calcutta the high temperature to which water, and especially shallow, stagnant water, rises during the hot season, appears to be inimical to most forms of animal life, while life flourishes in the comparatively, but not actually cold water of the cool season. In Calcutta few of the "tanks" dry up at any time of the year; but the fact that they do so in many parts of the warmer regions of the world may have had an effect on the history of the pond fauna of a district geologically so recent as Lower Bengal. Regarded from a geological standpoint, the animals of this part of the country are, without exception, recent immigrants, and we find that some characteristic representatives of even the Indian terrestrial fauna (e.g., Chamæleon calcaratus and Sitana ponticeriana) have never managed to establish themselves in the Ganges delta. Aquatic animals can usually adapt themselves to changed conditions, as we see by comparing the fauna of a Calcutta "tank" and that of a British pond and noting the many resemblances and identities; but changes are brought about very gradually unless they are of essential importance to the well-being of an organism, and it is not improbable that the crisis which takes place in the life cycle of so many of the animals of the Calcutta "tanks" towards the end of March, is not due solely to the actual rise in temperature which then occurs, but also in part to an inherited rhythmical tendency which protected the ancestors of these organisms from perishing in a climate in which the extremes of moisture and dryness were more widely separated than they are in Lower Bengal.

#### SUMMARY.

At least two species of Dipterous larvæ, a Beetle larva, a Neuropterous larva of the genus Sisyra, and a Worm probably belonging to the genus Chætogaster, occur in the substance of

living specimens of Spongilla carteri in Calcutta, while several other animals seek shelter in the dead skeleton of the Sponge. The Worm appears to be beneficial to its host in that it assists in the dispersal of the gemmules, while one of the Dipterous larvæ strengthens the skeleton of the Sponge by building tough and persistent tubes in the substance of its host.

### EXPLANATION OF PLATE I.

Fig. 1.—Vertical section of a specimen of Spongilla carters which has sunk to the bottom. The upper, lighter portion was living, the lower, dark part practically dead. February 6th. (Natural size).

G=gemmule. T=tube of *Okironomus* larva. R= rootlet of plant to which the Sponge was attached.

Fig. 2.—An undetermined Beetle larva from Spongilla carteri, × 10.

Fig. 3.—Ventral surface of larva of Sisyra sp., from Sponyilla carteri,  $\times$  10.

All the figures are from specimens preserved in formaline.

26. Notes on the Freshwater Fauna of India. No. VI.—The Life-History of an Aquatic Weevil.—By N. Annandale and C. A. Paiva.

So far as we are aware, no member of the family Curculionide has been recorded as an aquatic Insect. In the autumn of 1905, however, one of us found a few specimens of a small Weevil among water-weeds in the Museum "tank" in Calcutta. At the beginning of March, 1906, another, considerably smaller species was noted under similar conditions in Chota Nagpur; but unfortunately all the specimens obtained were accidently destroyed. In the same month, especially towards the latter half, the Calcutta species was abundant, and we are now able to give a general account of its life history, which is surprisingly similar to that of many terrestrial forms.

Although we do not propose to attempt a generic identification of this Weevil, it will be well to commence with a description

of the species.

## DESCRIPTION OF AN AQUATIC WEEVIL.

The antennæ are elbowed and the basal joint fits into a groove on the surface of the rostrum They are inserted at a point a little distal of the middle of the rostrum, than which they are longer. The first joint is equal in length to the sum of the remaining joints; the distal joint is flattened and expanded. The rostrum is stout, slightly curved, and approximately equal in length to the head and pronotum together. The head is small and deflexed, its base being covered by the anterior border of the pronotum. The eyes are small and rounded, and are situated on the sides of the head, at the base of the rostrum. The prothorax has the lateral margins rounded. The elytra are truncate proximally, pointed apically, with two blunt tubercles on each, one near the base and one a little distance from the apex; they cover the abdomen entirely and are very convex outwards. The coxe are subconical and prominent, the anterior pair being contiguous, the intermediate pair slightly and the posterior pair very widely separated from one another. The femora are incrassate from a little beyond the middle point to the apex; the tibiae are long, slender, curved towards the apex, ending in a sharp claw; the tarsi are 4-jointed, and each joint is clothed below with a tuft of fine, white hairs. The head, thorax and elytra are finely punctured, the sides of the pronotum being also vertically, sinuately striated, and the elytra deeply grooved longitudinally.

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Total length 4	mm.	5 mm.
Breadth of thorax 0.75	,,	1 ,,
Length of rostrum 1	29	1.5 ,,

Colour.—Silvery grey; eyes black, rostrum piceous; antennæ, tarsi, tibiae and base of femora ferruginous, the antennæ rather darker than any part of the limbs.

#### HABITS.

The adults feed on the floating leaves of Limnanthemum. They also eat the stems of the same plant, crawling down them into the water. Their bodies are lighter than water and consequently rise to the surface if dislodged. Their powers of swimming are feeble and their movements on the surface are directed solely to securing hold of the nearest leaf or other floating object Under water each antenna carries a bubble of air, which may be useful, as Miall suggests, in the case of certain true Water Beetles, in enabling these organs to perform their delicate sensory functions. The dorsal surface of the abdomen is flat, leaving an empty space beneath the convex elytra, the edges of which fit very closely to the lateral margins of the dorsal surface of the abdomen. The wings are closely applied to the elytra above. The space thus formed is filled with air. beetle may sometimes be seen holding on to the edge of a Limnanthemum leaf, with the tip of the abdomen out of the water. Doubtless it is taking in fresh air into this space; but the spiracles are not in any way modified to assist in the operation. Bubbles of air are not set free under water.

The sexes couple on the upper surface of the Limnanthemum leaves in March. Union lasts for some hours, and then the male goes off in search of a fresh mate. The female descends beneath the surface, clinging to a stem. At intervals she bites small funnels in the substance of the stem, and in some of these she deposits eggs, one egg in each funnel. We have not found more than one egg in each stem in the "tank," but captive females sometimes lay several in a stem. The egg is elongated and rounded at both ends. It measures about 0.8 mm. in length, and 0.3 mm. in tranverse diameter. The female has no ovipositor, but the posterior extremity of her abdomen is slightly tubular in shape. She pushes the egg along under the bark so that it lies with its major axis parallel to the external surface of the stem. The young larva is of a dark reddish-brown colour owing to its large salivary glands, which are of this colour, showing through the transparent skin. It is rather more slender than some Weevil larvæ but otherwise normal. The eye is small and very inconspicuous. There is a black spot on the last segment of the abdomen. The respiratory system is similar in all respects to that of a terrestrial species. Indeed, there is no necessity for any structural adaptation for life inside the stem, which is naturally full of air, its tissues, like those of the stems of many water-plants, containing closed spaces which render it buoyant. What has occurred is a modification of instinct which has allowed the Beetle to make use of the air-spaces in the plant; but this modification of instinct has not been accompanied, as it has in the case of the larva of the European Donacia crassipes,\* by the development of a special organ for piercing the walls of the air-spaces. The larva eats away these walls with its jaws, as it forms the larger cavity in which it lives, and so is well supplied with air by the same action which gives it nourishment.

<sup>1</sup> Nat. Hist. Aquatic Insects, p. 34.

<sup>2</sup> id., op. cit., p. 95.

Immediately after emerging, the larva begins to eat, moving through the stem either upwards or downwards as chance may direct it. By feeding on the tissues of the stem it soon forms a vertical tunnel, which increases in width as it does. This tunnel reaches the length of about an inch and half, but behind the larva it is filled with excreta. The funnel in which the egg was laid disappears with the growth of the plant.

After undergoing several ecdyses the larva becomes of a

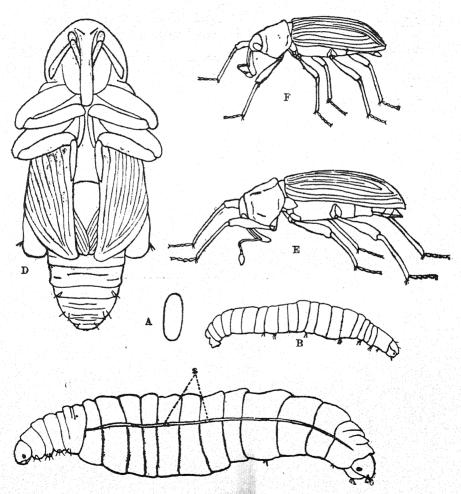


Fig. 1. The Metamorphosis of an Aquatic Weevil.

A=egg (×16). B=young larva, probably in its second instar (×16). C=adult larva (× 16), s—spiracles. D=pups (× 16). E=adult female (×8). F=adult male (×8). A-D from specimens preserved in formaline: E and F from dried specimens.

pinkish colour, owing to an accumulation of fat which conceals the salivary glands. At this stage it is about 6 mm. long. Its girth is now sufficiently great to affect that of the stem in which it lives. and the latter bulges out round the chamber in which it pupates. The pupa is perfectly normal. It lies in the stem with its ventral surface directed towards the thinnest wall of the stem, and through this the adult eats its way.

Although many eggs were laid in our aquarium, we have been unable to watch the metamorphosis, as the ova of a captive specimen did not develop. The foregoing notes are therefore derived chiefly from observations on a large number of infected Limnanthemum plants brought from the Museum "tank" and examined

fresh.

We have found both Chironomid larvæ and Planarians in the tunnels made by the Weevil, but are unable to say whether they had entered the tunnels merely for the sake of shelter or to feed on the proper occupants.

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<sup>·</sup> March William In the Company of th AT PARTY AND THE CONTRACT OF T

27. Notes on the Freshwater Fauna of India. No. VII.—A new Goby from Fresh and Brackish Water in Lower Bengal.—By N. Annandale, D.Sc., C.M.Z.S.

The Fish described in this note was obtained in large numbers at Port Canning (Lower Bengal) in January, and has recently been taken in Calcutta. I have to thank Col. A. W. Alcock for much assistance in its determination and description.

## GOBIUS ALCOCKII, sp. nov.

Diagnosis:-

D 5  $\frac{1}{6\cdot7}$ . A  $\frac{1}{7}$ . L. lat. 26 to 28. L. trans. 9. Body compressed, moderately elongate; the height 6 times in the total length including caudal fin. Length of head 33 times in total length including caudal fin; diameter of eye greater than length of snout, less than interorbital breadth; eyes large, feebly protuberant; cleft of mouth small, oblique; several rows of teeth in both jaws, canines well developed; snout obtuse, rounded. Two rows of tubercles below the mouth on each side and a less distinct A-shaped series on the lower proximal part of the cheek. Dorsal fins well separated, barely as high as body, their spines without filamentous prolongations; tail fin rounded. Scales relatively large, conspicuctenoid. Colour white (in life translucent), with two broad, black, vertical bars on the head and four or five on the body; the top of the head suffused with black or wholly black; the dark markings produced by an aggregation of relatively large, star-shaped pigment-cells which are separated more or less distinctly from one another.

Length of a spawning female (the largest individual seen)—

16 mm.

The most remarkable points about this little Fish are its small size and its juvenile appearance, which has evidently caused it to be passed over undescribed. At least one other species of the same family, the Philippine Mistichthys luzonensis (which is said to be

the smallest known vertebrate) is as small.

The specimens taken at Port Canning were netted among weeds overgrown with Polyzoa and Sponges (Spongilla lacustris var. bengalensis) in brackish pools; while the one collected in Calcutta was found among the roots of a plant of Pistia stratiotes from a "tank" in the Zoological Gardens at Alipur. This specimen was engaged in spawning. The eggs, which were rather large for the size of the parent, measured 0.9 mm., by 0.9 mm., by 1 mm., and were somewhat irregular and variable in outline, the majority having a more or less pear-like form. They were attached to rootlets near the centre of the bunch, surrounding a cavity such as is often produced in Pistia stratiotes by some of the roots decaying and falling away after being attacked by Insects. The female, whose fin membranes were much torn, died on the day following her capture, and ova were seen issuing from her body. Judging

from the size and appearance of the eggs, I have little doubt that *Gobius alcockii* is the Fish which also spawns in depressions on the surface of *Spongilla carteri*.

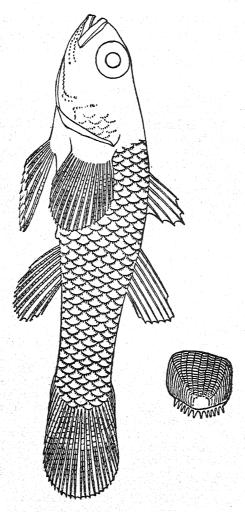
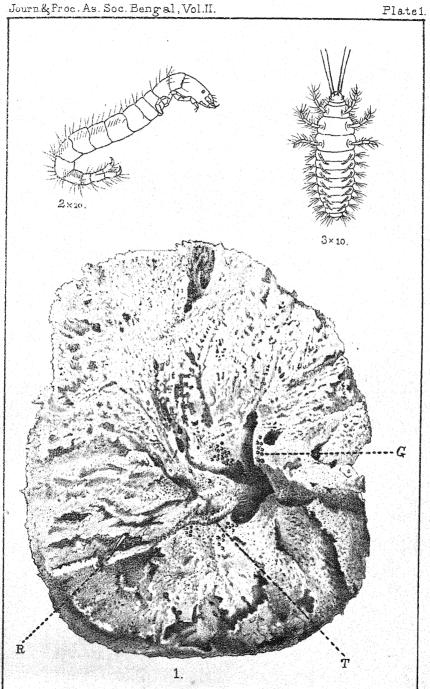
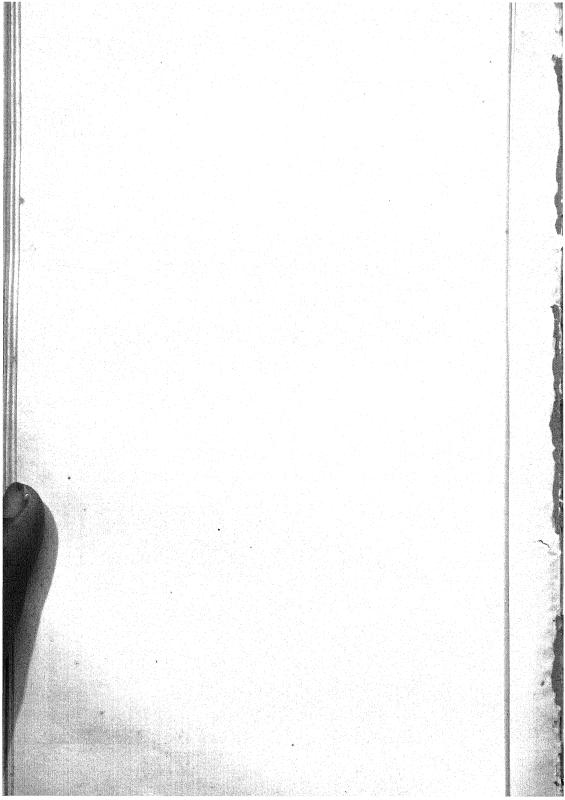


Fig. 1. Gobius alcockii (× 9).
With a lateral scale (highly magnified)



A.C.Chowdhary.del & Lith



# H.

#### NOTICE.

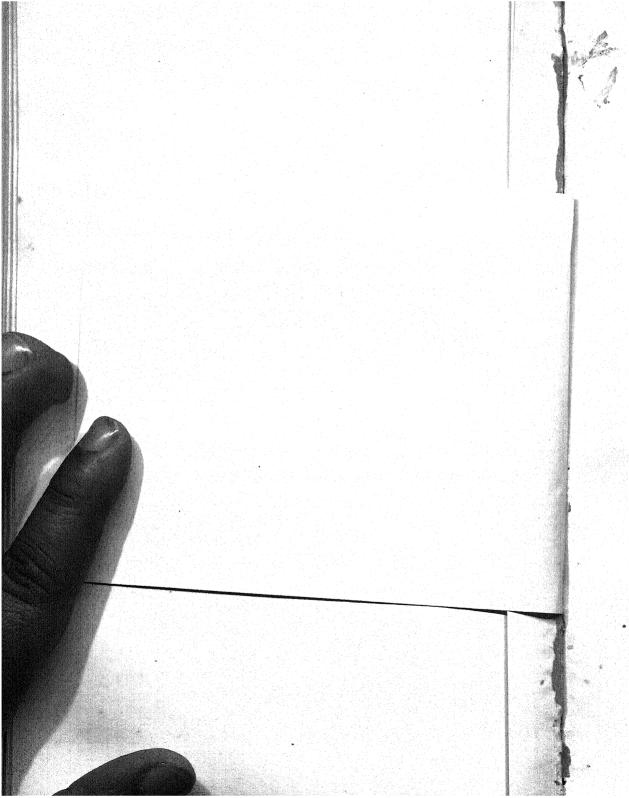
Foreign Societies who favour the Asiatic Society of Bengal with their publications are informed that they may be sent either to the address of the Society at Calcutta, or to the Agents of the Society in London, Mr. Bernard Quaritch, 15 Piccadilly.

#### Avis.

Les Sociétés étrangères qui honorent la Société Asiatique de Bengale de ses publications, sont priées de les envoyer ou directement à l'adresse de la Société, 57, Park Street, Calcutta, ou à l'agent de la Société à Londres, Mr. Bernard Quaritch, 15 Piccadilly.

#### ANZEIGE.

Ausländische Gesellschaften welche die Asiatische Gesellschaft von Bengalen mit ihren Publicationen beehren, werden hierdurch ersucht dieselben entweder direkt an die Adresse der Gesellschaft, 57, Park Street, Calcutta, oder an den Agenten in London, Mr. Bernard Quaritch, 15 Piccadilly, zu senden.



# June, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 6th June, 1906, at 9-15 P.M.

MAJOR F. P. MAYNARD, I.M.S., in the chair.

The following members were present:-

Dr. N. Annandale, Mr. I. H. Burkill, Mr. J. A. Chapman, Mr. L. L. Fermor, Rev. E. Francotte, S.J., Mr. H. G. Graves, Mr. D. Hooper, Dr. M. M. Masoom, Captain J. W. Megaw, I.M.S., Mr. R. D. Mehta, Lt.-Col. D. C. Phillott, Major L. Rogers, I.M.S., Mr. R. R. Simpson, Major J. C. Vaughan, I.M.S., Mr. E. Vredenburg.

Visitors: - Rev. G. W. Olver, Mr. W. W. R. Prentice.

The minutes of the last meeting were read and confirmed.

Forty-two presentations were announced.

The General Secretary announced that Major-General M. G-Clerk, Lt.-Col. D. S. E. Bain, I.M.S., Mr. F. P. Dixon, and Lt.-Col. A. Alcock, F.R.S., had expressed a wish to withdraw from the Society.

The proposed creation of a Medical Section in the Society, of which intimation had already been given by circular to all members, was brought up for final disposal. The votes of the members were laid on the table, and the Chairman requested any Resident Members, who had not expressed their opinion, to take the present opportunity of filling in voting papers. Two such papers were filled in, and with the 80 returned by members were scrutinized. The Chairman appointed Messrs. L. L. Fermor and E. Vredenburg to be scrutineers. The scrutineers reported as follow:—For 73. Against 9.

Carried.

Panedya Umapati Datta Sharma, Principal, Sree Visuddhanand Saraswati Vidyalaya, proposed by Lt.-Col. D. C. Phillott, seconded by Mahamahopadhyaya Haraprasad Shastri; Kumar Manmatha Nath Mitra, Zemindar, Calcutta, proposed by Mahamahopadhyaya Haraprasad Shastri, seconded by Babu Panchanan Mukhopadhyaya; Sri Surendra P. Sanyal, Private Secretary to Raja Bahadur, Majhauli, U.P., proposed by Mahamahopadhyaya Haraprasad Shastri, seconded by Lt.-Col. D. C. Phillott; and Mr. C. C. Young, Engineer, East Indian Railway, proposed by Major L. Rogers, I.M.S., seconded by Dr. W. C. Hossack; were ballotted for and elected Ordinary Members.

Mr. L. L. Fermor exhibited some Indian stony meteorites recently acquired for the Geological Museum.

They were as follows:-

(1) Two aerolites, weighing 1574:35 and 1000:6 grammes, respectively, which fell on 29th October, 1905, at Bholgháti, Morbhanj

State, Bengal. (The larger stone is the property of the Morbhani Museum). They were seen to fall in the daytime when the sky was clear, and the observer distinctly states that they were not luminous.

- (2) Two portions of an aerolite, weighing, respectively, about 14,700 grammes, and 3086 6 grammes, which fell on the 27th April, 1905, at Karkh, Jhalawan, Baluchistan This fall took place in the daytime when the sky was clear, and was first noticed as a meteor or fire-ball having a tail of smoke. The larger specimen shows beautiful pittings and flow markings on the crust.
- (3) An aerolite weighing 1078.8 grammes which fell, it is said, during a thunderstorm, in August or September, 1878, near Haraiya, Basti district, U.P. This meteorite is notable on account of its crust which shows delicate linear ridges radiating from the middle of one side of the stone. These ridges were produced by the action of the air on the fused exterior of the meteorite as it sped rapidly through the atmosphere; they enable one to orientate the stone with regard to its line of flight.

The following papers were read:-

- 1. Note on a rare Indo-Pacific Barnacle.—By N. Annandale, D.Sc., C.M.Z.S.
- 2. Contributions to Oriental Herpetology. No. IV.—Notes on the Indian Tortoises.—By N. Annandale, D.Sc., C.M.Z.S.
- Rawāts and Merāts of Rajputana.—By R. C. Bramley. Communicated by Mr. R. Burn.
- 4. An old reference to the Bhotias.—By H. Beveridge, I.C.S. (retired).
- The Common Hydra of Bengal; its systematic Position and Life History.—By N. Annandale, D.Sc., C.M.Z.S.

This paper will be published in the Memoirs.

- 6. Revenue Regulations of Aurangzib (with the Persian Texts of unique Farmans from a Berlin Manuscript.)-By JADU NATH SARKAR, M.A.
- 7. The Dards at Khalatse in Western Tibet.—By Rev. A. H. FRANCKE.

This paper will be published in the Memoirs.

8. Parasites from the Gharial (Gavialis gangeticus, Geoffr.)— By Dr. von Linstow, Gættingen. Communicated by Dr. Annandale.

This paper will be published in a subsequent issue of the Journal and Proceedings.

- Shāista Khān in Bengal, 1664-66.—By JADU NATH SARKAR, M.A.
- 10. Some current Persian Tales told by Professional Story-Tellers.—By LIEUT.-Col. D. C. PHILLOTT, Secretary, Board of Examiners, Calcutta.

This paper will be published in the Memoirs.

# LIBRARY.

The following new books have been added to the Library during May 1906:—

Ahern, George P. A Compilation of notes on India-Rubber and Gutta-Percha. Manila, 1906. 8°.

Department of the Interior, Bureau of Forestry, Bulletin, No. 3.

Presd. by the Bureau.

Annandale, N. Preliminary Report on the Indian Stalked Barnacles. [London, 1906.] 8°.

From the Annals and Magazine of Natural History, 1903.

Presd. by the Author.

Australian Museum.—Sydney. Nests and Eggs of Birds found breeding in Australia and Tasmania. By A. J. North. Vol. I, etc. Sydney, 1904, etc. 4°.

Presd. by the Museum.

British Museum.—Natural History. Catalogue of the Fossil Plants of the Glossopteris Flora in the Department of Geology...By E. A. N. Arber. London, 1905. 8°.

Presd. by the Museum.

Cabaton Antoine. Les Chams de l'Indo-Chine. Paris, 1905. 8°

Extrait de la Revue Coloniale.

DINKARD. The Pahlavi Dinkard. Book VII. Lithographed by Manockji Rustamji Unvala. Bombay, 1904. 4°.

Presd. by the Trustees of the Parsee Punchayet Funds and Properties, Bombay.

Ferguson, John. Bibliotheca Chemica: a catalogue of the alchemical, chemical and pharmaceutical books in the collection of the late James Young of Kelly and Durris. 2 vols. Glasgow, 1906. 8°.

Presd. by the Trustees to the Family of the Late James Young.

Foster, William. The Journal of John Jourdain, 1608-1617, describing his experiences in Arabia, India and the Malay Archipelago. Cambridge, 1905. 8°.

Hakluyt Society's Publications, Second Series, No. XVI.

Presd. by the Govt. of India, Home Dept.

- Frazer, J. G. Lectures on the Early History of the Kingship. London, 1905. 8°.
- Haas, W. R. Tromp de. Uitkomsten van de in 1905 verrichte aftappingsproeven met Hevea Brasiliensis in den Cultuurtuin te Tjikemeuh verkregen. [Batavia, 1906.] 8°.
- Jong, Dr. A. W. K. de. De Verandering van het alkaloïd der Cocabladeren met den onderdom van het Blad. [Batavia, 1906.] 8°.

Presd. by the Botanic Institute of Buitenzorg.

Kern, H. Gedenkteekenen der oude indische Beschaving in Kambodja. [Batavia, 1904.] 8°.

Overdruk uit Onze Eeuw, 1904.

Presd. by the Author.

- Macdonald, George. Coin Types. Their origin and development. Being the Rhind lectures for 1904...With...plates. Glasgow, 1905. 8°.
- Margoliouth, D. S. Mohammed and the Rise of Islam. New York, London, 1905. 8°.
- Maule, William M. The Charcoal Industry in the Philippine Islands. 2. La Industria del carbón vegetal en las islas Filipinas. Manila, 1906. 8°.

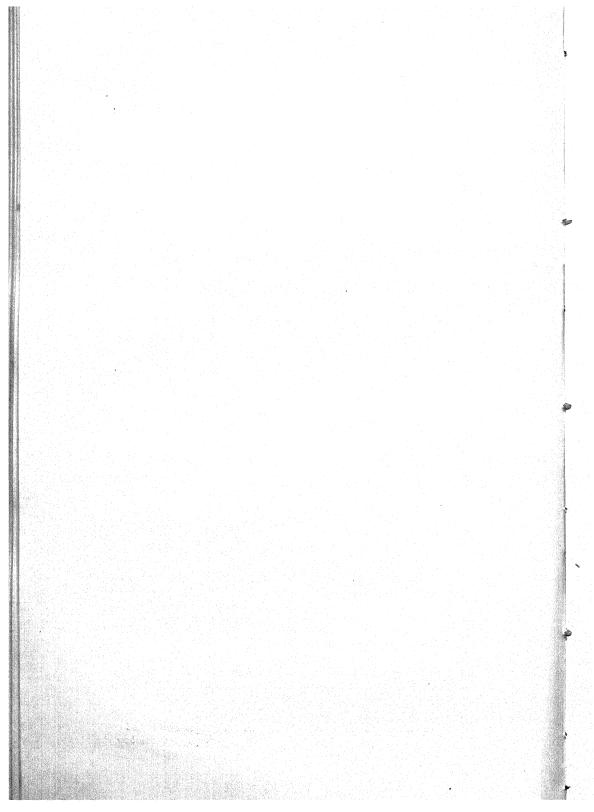
Department of the Interior, Bureau of Forestry, Bulletin No. 2.

Presd. by the Bureau.

- Mehmed Tschelebi. Ein ursprünglich Türkisch verfaszter schwank in neupersischer übersetzung. Nach einer handschrift herausgegeben und ins deutsche übertragen von L. Pekotsch... Nach der Türkischen vorlage und einer Arabischen version untersucht und mit Textkritischen Anmerkungen versehen von Dr. M. Bittner. Wien, 1905. 8°.
- Mills, Dr. Lawrence Heyworth. Zoroaster, Philo and Israel, being a treatise upon the Antiquity of the Avesta.

  Leipzig, 1903-04. 8°.

Presd. by the Trustees of the Parsee Panchayet Funds and Properties, Bombay.



Missions Scientifiques au Spitzberg. Missions Scientifiques pour la Mesure d'un Arc de Méridien au Spitzberg. Entreprises en 1899-1902. Sous les auspices des Gouvernements Suédois et Russe. Tome I, II Sect., B; Tome I, V Sect.; Tome II, VII Sect., A; Tome II, VIII Sect., A, B, B<sup>1-5</sup>, C; Tome II, X Sec. Stockholm, 1904. 4°.

Presd. by Mesure d'un Arc de Méridien au Spitzberg.

Modi, Jivanji Jamshedji. Asiatic Papers: papers read before the Bombay Branch of the Royal Asiatic Society.

Bombay, 1905. 8°.

Presd. by the Trustees of the Parsee Panchayet Funds and Properties, Bombay.

- Murray, John. Handbook for Travellers in Asia Minor, Transcaucasia, Persia, etc. Edited by Major-General Sir Charles Wilson. With maps and plans. London, 1905. 8°.
- Paris.—Bibliothèque Nationale. Catalogue des manuscrits Persans. Par E. Blochet. Tome I, etc. Paris, 1905, etc. 8°.
- Sarasin, Paul and Fritz. Reisen in Celebes. Ausgeführt in den Jahren 1893-1896 und 1902-1903. 2 vols. Wiesbaden, 1905. 8°.
- Schroeder, Albert. Annam. Études Numismatiques. Text. and plates. Paris, 1905. 8°.
- Srīnivāsa Dāsa. যনীন্দ্রমনহীবিকা (মতীকা) [Yatīndramatadīpikā... With commentary called Prokāśa by Vásudeva S'āstrī.] [Poona, 1906.] 8°.

Ānandāśrama Sanskrit Series, No. 50.

**Tchang,** Mathias, S. J. Synchronismes Chinois. Chronologie complète et concordance avec l'ére chrétienne de toutes les dates concernant l'Histoire de l'Extrême-Orient, etc. Chang-Haī, 1905. 8°.

Variétés Sinologiques. No. 24.

- Tisdale, Rev. W. St. Clair. The Original Sources of the Qur'an London, 1905. 8°.
- Turner, Samuel. Siberia: a record of travel, climbing and exploration...With an introduction by Baron Heyking. Illustrated, etc. London, 1905. 8°.

요즘 이 계약 가능한 보고 있을까요? 한 번째 보이 하시아 보고 있다. 그 사람이 없는 사람이 가는 사람들은 사용하는 것은 것으로 이 연락하는 것이 되었다. 

Verbeek, R. D. M. Description Géologique de L'Ile D'Ambon. Text and Atlas. Batavia, 1905. 8°.

> Presd. by His Excellency the Governor-General, Netherlands, India.

Wilbrink, G. Tweede Verslag van de Selectie—Proeven met de Natal—Indigoplant. Drukkerij, 1906. 8°.

Presd. by the Botanic Institute of Buitenzorg.

Wright, William. Elementary Arabic: a Grammar by Frederic du Pre Thornton, being an abridgement of Wright's Arabic Grammar...Edited by R. A. Nicholson. Cambridge, 1905. 8°.



28. Contributions to Oriental Herpetology. No. IV.—Notes on the Indian Tortoises.—By N. Annandale, D.Sc., C.M.Z.S. (With one plate.)

Although the Indian Museum possesses an almost complete collection of the known Indian Chelonia, there is comparatively little to be said about the specimens; few have been added during the last twenty years, and the late Dr. J. Anderson, who was mainly instrumental in getting the collection together, described the greater part of it in considerable detail. More recently, however, Mr. G. A. Boulenger's Catalogue of the Chelonia in the British Museum (1889) and Reptilia and Batrachia ("Fauna of India," 1890) have cast so much new light upon the group that notes may be useful on certain species. It is probable that considerable additions might be made to our knowledge if specimens were collected in the more remote districts of the Indian Empire, notably in Upper Burma and on the North-West Frontier. In the cases of land tortoises it is easy to transport living specimens, while even the skulls and shells of aquatic species would be valuable. In this connection I must express my thanks to Messrs. Vredenburg and Tipper, of the Geological Survey of India, and to the Political Agent at Kelat, for obtaining and sending to the Indian Museum from Baluchistan, a large series of one rare and important form. Similar consignments from other parts would be most gratefully received.

It is unnecessary to mention the marine species.

### TRIONYCHIDAE.

TRIONYX GANGETICUS, Cuvier.

We have several well-authenticated and typical skulls from Sind.

EMYDA GRANOSA (Schoepff).

The typical variety appears to be widely spread in Upper India, to which it is probably confined. var. VITTATA. 3

E. vittata, Boulenger, Faun. Ind, Rept., p. 17.

I cannot regard this form as more than a variety of *E. granosa*, its one constant diagnostic character being its coloration. Although it is common only in Ceylon and in Central and Southern India, it extends northwards into southern Bengal; I have examined specimens from Singhbhum. There are skeletons labelled as belonging to this form in the Museum from Chota Nagpur and Sind; but their varietal identity is uncertain.

#### TESTUDINIDAE.

## Testudo elegans (Schoepff).

There is a young specimen in the Museum from the Calcutta Botanical Gardens; but Boulenger is probably right in stating the distribution of the species as "India (except Lower Bengal)," for many imported Reptiles have been found in the Botanical Gardens, and T. elegans appears to shun damp localities.

## TESTUDO PSEUDEMYS, Boulenger.

T. pseudemys, Boulenger in Annandale and Robinson, Fascic.

Malay., Zool., 1, p. 144, Fig. 1 and Pl. IX.

A young specimen from Pegu in the Museum agrees closely as regards skull characters with the type. The antero-lateral margins of the vertebral shields are, however, less markedly shorter than the postero-lateral.

I have nothing to add to the discussion as to the distinction or agreement between T. emys and T. phayrei; but this specimen appears to be one of those associated with the latter name by

Anderson.

## TESTUDO HORSFIELDII, Gray (Pl. II, Fig. 2).

T. horsfieldii, Boulenger, Cat. Chelonians, p. 178.

There are specimens in the Museum from Afghanistan and Eastern Persia, and I have lately received twenty-three living examples from Kelat. The latter vary considerably in size and age, and are of both sexes; but although several have been injured in the carapace and plastron, all have the carapace flattened in the dorsal region. The skulls of eight specimens have been examined; they vary considerably in respect to the following characters: relative width; flatness; relative breadth of the postorbital arch; the development or absence of a transverse depression on the anterior part of the dorsal wall of the cranium; and the degree

of serration of the upper jaw.

T. horsfieldii is an active species, walking, with considerable rapidity, very high on its legs. It is timid, but hisses when disturbed. When eating or drinking it occasionally emits a low croak like that of a frog. Captive specimens conceal themselves during the heat of the day and at night, feeding at dusk and in the early morning. They are fond of most flowers and fruits and of the thick, fleshy leaves of various plants; but they generally refuse to eat grass. They drink water greedily. Females captured in April contained eggs of the size of duck shot; in one oviduct of a large specimen killed towards the end of May there were five fully-formed eggs with a thick, calcarious shell. The eggs measured 50 mm. by 35 mm.

TESTUDO BALUCHIORUM, Annandale (Pl. II, Fig. 1).

T. baluchiorum, Annandale, in Journ. As. Soc. Bengal, 1906,

p. 75.

This species is very close to the preceding one. The main difference lies in the shape of the carapace, which in *T. baluchiorum* is not flattened in the dorsal region and descends more abruptly at the sides and in front. Neither the skull characters mentioned in my original account of *T. baluchiorum* nor the number of tubercles on the back of the thigh can be regarded as affording a constant diagnosis, as *T. horsfieldii* is evidently variable in these respects.

Of exotic tortoises of the genus Testudo in the Indian Museum, I may call attention to a large skull of the extinct T. triserratu from Mauritius, and series of skeletons of the Madagascan species T. radiata. Most of the specimens of the latter species are labelled "Mauritius," and it is probable that large numbers were at one time introduced into Calcutta from Madagascar viā that island. It is probable, further, that the species, which has certainly been confused in some cases with T. elegans, is or was feral in parts of Bengal. As a parallel instance I may mention that the commonest terrestrial Mollusc in Calcutta gardens is a snail introduced from Mauritius, namely, Achatina fulica, Fér.

## NICORIA TRIJUGA (Schweigg.).

In my recent note 1 on the distribution of the var. thermalis of this species, I neglected to refer to Mr F. F. Laidlaw's 2 record of its occurrence in the Maldives, whither it has probably been brought from Ceylon. The var. edeniana probably occurs in Chota Nagpur, judging from the large size of skeletons from that district, as well as in Burma.

## Bellia Crassicollis (Gray).

In addition to specimens from Burma and Malaya, there is a skeleton in the Museum said to have come from Travancore. In several specimens examined, the serration of the posterior margin of the carapace is obsolete.

# MORENIA PETERSII, Anderson (Pl. II, Fig. 4).

There are several specimens in the Museum from the neigh-

bourhood of Calcutta, as well as the types.

M. petersii is easily distinguished from M. ocellata (Pl. II, Fig. 3) by its coloration and by its skull characters; but the relative proportions of the plastral shields are not constant in either species.

1 Mem. As. Soc. Bengal 1, p. 185.

<sup>&</sup>lt;sup>2</sup> In Gardiner's Maldives and Laccadires, Vol. I, p. 122.

# A LIST OF THE INDIAN TORTOISES.1

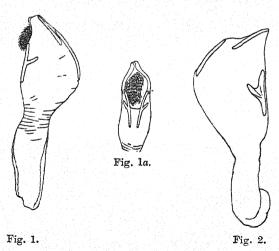
Tri	onycidæ-		
1.	Trionyx subplanus, Geoffr.		Lower Burma.
2.	,, gangeticus, Cuv.	• • • •	Ganges and Indus basins.
3.	" leithii, Gray		South and Central India.
4.	", hurum, Gray		Ganges and its tributaries.
5.	,, formosus, Gray		Rivers of Burma.
6.	,, phayrii, Theob.		Lower Burma.
7.	" cartilagineus (Bodd.)		Lower Burma.
	Pelochelys cantoris, Gray		Ganges and Burmese rivers.
	Chitra indica (Gray)	***	Ganges and Irrawaddy.
10.	Emyda granosa (Schoepff.)	• • •	Peninsular India, Burma and Ceylon.
11.	" scutata, Peters.	••••	Irrawaddy.
m			
	tudinidæ—		무리면 보고를 되었다. 등 이 보는 네트
	Testudo elongata, Blyth	•••	Bengal, Assam, Burma.
	? Testudo leithii, Gthr.		? Sind.
14.	Testudo elegans, Schoepff.	•••	Peninsular India except Lower Bengal; Calcutta (? introduced); Ceylon.
15.	" platynota, Blyth		Burma.
16.	" emys Schleg. & Müll.	•••	Assam; Burma.
17.	", pseudemys,* Blgr.	• • •	Lower Burma.
18.	" horsfieldii,* Gray.	•••	Kelat, Baluchistan.
19.	,, baluchiorum,* Annand	•••	Baluchistan.
20.	Geomyda spinosa (Gray)		Lower Burma.
21.	,, grandis, Gray	•••	Lower Burma.
22.	", depressa, Anders.	• • • •	Arakan hills.
23.	Nicoria trijuga (Schweigg.)	•••	Peninsular India; the Punjab Burma; Ceylon; the Maldives.
24.	" tricarinata (Blyth)	• • •	Chota Nagpur ; Bengal ; Assam.
25.	Cyclemys platynota, (Gray)		Lower Burma.
26.	", dhor, (Gray)		Lower Burma.
27.	,, mouhoti, Gray	•••	Assam; Burma.
28.	" amboinenses (Daud.)	•••	Lower Burma; Nicobars.
29.	Bellia crassicollis, Gray	• • •	Tenasserim; Travancore.
	Damonia hamiltonii (Gray)	•••	Northern Peninsular India; the Punjab.
31.	Morenia ocellata (D. & B.)		Assam; Burma.
32.	,, petersii, Anders.	• • • •	Lower Bengal.
33.	Hardella thurgi (Gray)	•••	Ganges and Indus systems.
34.	Batagur baska (Gray)		Bengal; Assam; Burma.
35.	Kachuga lineata (Gray)	•••	Northern and Central Peninsular India; Burma.
36.	" trivittata (D. & B.)		Burma.
37.	,, dhongoka (Gray)		Ganges and Indus systems.
38.	" smithii (Gray)	•••	Upper Ganges and Indus and their tributaries.
39.	" sylhetensis (Jerd.)		Assam.
40	Kachuga intermedia, Blanf.		Central Provinces; Godaveri.
	Kachuga tectum (Gray)	•••	Ganges and Indus systems.
D)			성용 (구성, 기업에 성격하실 등 취임하는 것이 되었다. 보통 등학 - 사용 (기능성)는 전통 상계하는 것이 되었다. 기술 등 기계하는 것
	tysternidæ—		어른 아이들이 나는 바로 하네는 나라다.
42.	Platysternum megacephalum		

<sup>2.</sup> Platysternum megacephalum, Gray ... ... Burma.

<sup>1</sup> An \* indicates that a species is new to the Indian fauna since 1890. The names printed in italics are those of species not represented in the Indian Museum.

29. Note on a rare Indo-Pacific Barnacle.—By N. Annandale, D.Sc., C.M.Z.S.

Specimens of a Barnacle (Figs. 1, 1a) which I regard as identical with Owen's Conchoderma hunteri, have recently been received at the Indian from the British Museum; they are labelled as having been taken on a sea-snake (Hydrus platurus) in Ceylon by Mr. E. E. Green. They differ from Darwin's description and figures (Monogr. Cirr. Lep., p. 153, pl. III, fig. 3.) in the greater (but variable) relative length of the peduncle and in the fact that the terga are straight and the scuta, although of normal shape, hardly calcified at all. Hock regarded Owen's species as probably no more than a variety of C. virgatum (Spengler), a more common and probably a more widely distributed form; and a specimen from the Ganges delta in the Indian Museum gives additional support to this view. In this specimen (Fig. 2) the scuta are distinctly Y-shaped, but the two upper arms are joined together at the base by a delicate, feebly calcified web; the terga and carina are narrow and almost straight. The coloration is that of Spengler's form; whereas the Ceylon specimens agree with the descriptions of the types of C. hunteri, which Darwin believed to be faded, in their almost complete lack of pigment. Evidently this absence of pigment is characteristic. The appendages and mouthparts are normal in all the examples I have examined. A. R. Anderson, I.M.S., has recently presented to the Museum a Hydrus platurus from the Andamans to which typical examples of C. hunteri are attached.



The Ceylon specimens may be regarded as slightly aberrant, examples of C. virgatum var. hunteri, while that from Bengal

represents an intermediate variety. The typical hunteri is probably confined to the tropical parts of the Indian and Pacific Oceans, the only localities hitherto fixed being the Maldives or Laccadives <sup>1</sup> and New Britain.<sup>2</sup> The form has been taken on Hydrus platurus on several occasions, and once on a telegraph cable.

<sup>1</sup> See Borradaile in Gardiner's Maldives and Laccadives, Vol. I, p. 441.

<sup>&</sup>lt;sup>2</sup> See Stebbing in Willey's Zool. Results, Part V, p. 676,

30. The Rawats and Merats of Rajputana.—By R. C. Bramley.

Communicated by R. Burn.

#### INTRODUCTION.

The method by which Hinduism has gradually but silently extended its influence over the animistic tribes of India was graphically described by Sir Alfred Lyall in criticising a statement made by the late Profesor Max Müller, that Brāhmanism was opposed to missionary work on its own behalf. Discussions which arose from enquiries made into problems in connection with the last census showed, however, that the process of absorption, though undoubtedly active, is not unaccompanied by difficulties. While the caste system of the Hindus is theoretically rigid, abundant evidence proves that, in reality, it is constantly being altered. Changes at present are chiefly disintegrations into separate endogamous groups, but at the same time there are instances of groups rising in position, and being recognised as members of one of the twice-born castes. As is only natural, the caste which chiefly receives accessions in this manner is the Rajput. Its high position in society renders it a desirable group to belong to, while at the same time its unique formation in a number of exogamous clans, the members of which are bound by strict though varying rules of hypergamy, make it easier to enter than any other. When communications were difficult, it was possible for a tribe, after undergoing the slow process of absorption into Hinduism, and acquiring the whole paraphernalia of mythical ancestors and the like, to assume the desired position in its own territory unquestioned. If its members subsequently acquired sufficient wealth and influence outside the tribal territory, there would not be much difficulty in contracting marriages with the lower groups of recognised Rajputs, after which the rest was easy. At the present time, however, contact with the outer world is easier; fictions are thus more transparent, and, under the influence of a thin veneer of education, people are not content with the slow progress of former The circulation of printed books and railway communications have had results which have been often recorded; but the following careful study by Mr. R. C. Bramley, District Superintendent of Police in Ajmer-Merwara, of the revolution in progress in a Rājputāna tribe, the Merāts and Rāwats, shows a new factor, the influence of military service. It is also valuable as illustrating the advantages which Islam possessed over Hinduism as a proselytising religion.

R. Burn,
Superintendent for Ethnography,
Rājputāna.

<sup>1.</sup> It is but seldom that an opportunity occurs of observing the rise and progress of a social revolution among the inhabitants of the country. Such

a movement, naturally, arouses considerable interest and is a fit subject of study. A social change is in progress in the small British district of Merwara in Rajputana. Those portions of the Merwara clans who profess to be Hindus and who, up to 1903, intermarried and interdined with the Merāt Kātāts, who profess Muhammadanism, have now decided to abandon this intercourse, on the general ground that Hindus cannot intermarry and interdine with the adherents of another faith. It is a noteworthy thing that the inhabitants of a particular district, some of whom have professed Hinduism and others Muhammadanism for centuries, and yet have interdined and intermarried freely, should suddenly abandon these old-established social customs on the ground that their religions are different. For centuries this difference of religion has been no barrier to social intercourse. Then how comes it to pass that it is now put forward as the reason for discontinuing social customs which have been in vogue for so long a time? To trace the origin and progress of this movement, and to indicate its probable results, will be interesting as well as instructive. For the sake of convenience, the Hindu portion of the Merwara clans will be referred to as Rāwats and the Muhammadan portion as Merāts. The term Rawat, it may be explained, is, in reality, a petty title of nobility; but it is convenient, inasmuch as all Rawats are Hindus.

2. In order to be able to understand a social revolution of this nature, it is necessary to know something of the tract called "Merwāra" and of the people who inhabit it. Merwāra, which

means the "hilly country" (Sanskrit meru, a hill) is a small British district in Rājputāna lying between 25° 24' and 26° 11' N. and 73° 45' and 74° 29' E., and is one of the two districts which make up the small province of Ajmer-Merwara. Prior to 1818 its history is a blank. It was inhabited by people with the proclivities of Highland caterans, who acknowledged no master and who lived solely by plundering the surrounding Rajputana States. With the advent of the British in 1818 the scene changes and the history of the district becomes one of its administration. Of the original inhabitants little or nothing is known. The district is said to have been an impenetrable jungle, and such information as is available goes to show that it was inhabited by Chandela Gujars, Brāhmans, Bhāti Rājputs and Minas. The present people do not claim to be the original inhabitants. They are promiscuously designated "Mers" which means "hillmen." The name is not that of any caste or tribe and is only correct in so far as it means those who live on this portion of the Aravali range. The inhabitants claim descent from Prithwi Raj, the last Chauhan king of Ajmer, who ruled in the 12th century of the Christian era. The story is that Jodh Lākhan, the son of Prithwi Rāj, married a Mīna girl, who had been seized in a raid near Bundi, thinking her to be a Rajputni. Subsequently he discovered his mistake and turned her and her two sons Anhal and Anup away. The exiles wandered to Chang, in the Beawar Pargana of Merwara, and were hospitably entertained by the Gujars of that place. One day the two

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brothers were resting under a bargad tree (Ficus indica) and prayed that, if their race was destined to continue, the trunk of the tree might be rent in two. This occurred instantly and raised Anhal and Anūp from their despondency. The splitting of the fig tree is a cardinal event in the history of the race. There is a distich which runs:—

"Charar se Chītā bhayo, aur Barar bhayo Bar-ghat Shākh ek se do bhaye Jagat bakhānī Jāt."

"From the sound "Charar" (the noise made by the splitting tree) the Chitas are called, and the clan Barar from the splitting of the fig tree. Both are descended from one stock. The world has made this tribe formers."

has made this tribe famous."

3. Anhal settled at Chāng and, in course of time, his descendants exterminated the Gūjars who had succoured the exiles. This was the origin of the Chitā clan, which waxed strong and multiplied and established many villages in Merwāra and a few in Ajmer. There are several subdivisions of the Chitā clan, the most numerous and important of which is that of Merāts, a term synonymous with a Muhammadan Mer. The word "Merāt" is derived from Merā, the common ancestor of Merāt Kāṭāts, who are Muhammadans, and Merāt Gorāts, who are Hindus. In the controversy which has arisen between the Hindu and Muhammadan clans of Merwāra the Merāt Kāṭāts represent the latter element—all other clans are arranged on the side of Hinduism.

4. The origin of the Merāt Kāṭāts here claims notice. One Hurrāj, the grandson of Merā, took service at Delhi under the Emperor Aurangzeb. During a night of terrific rain, he remained at his post as sentry and sheltered himself under his shield. The matter was brought to the notice of the Emperor who is reported to have said:—

"In the Marwar tongue they call a brave soldier Kata: let

this man be henceforth called Kāta."

Shortly after this, Hurrāj embraced Muhammadanism and was the progenitor of the Merat Kāṭāts. The Kāṭāts settled in several villages in the Beāwar Tahsīl and spread northwards into Ajmer. They hold (1904) 93 villages in Merwāra.

5. The Merāt Gorāts, who are Hindus, are descended from Gorā, who was the brother of Hurrāj. They spread southwards and are to be found principally in the Todgarh Tahsīl.

6. The next clan which claims notice is the Barar clan.

The Barar Clan.

Anūp, the brother of Anhal, settled at Barsāwāra, now Todgarh, and founded the Barar clan. His descendants proved less enterprising than the

l The same story is told of several people, e.g., Muḥammad <u>Kh</u>ān Banga<u>sh</u> of Farru<u>kh</u>ābād.—R. B.

Chitas and are to be found only in Merwara. They like being called Rawats.

7. In addition to the Chītās (with their subdivisions of Merāt Kātāts and Merāt Gorāts) and the Other Clans. Barar clans who claim descent from Anhal and Anūp, the grandsons of the Chauhān King, Prithwi Rāj, there are other clans such as the Pramar, the Moti, the Gehlot and others who claim descent from others than a Chauhan Mina stock. Members of these clans are to be found in both Ajmer and Merwara. It is not necessary to set forth in detail the ancestry of each. For the purposes of this controversy it is sufficient to say that they all profess Hinduism and are called "Rawats," which in everyday use is understood to mean a Hindu Mer as opposed to a Merāt, by which is understood a Muhammadan Mer.

The Custom and Religious Beliefs of the Merwara Clans.

8. Whatever the origin of the various Merwara clans was, and whether they called themselves Hindus or Muhammadans, their customs were the With certain well-defined restricsame. tions, such as that a Chītā could not marry a Chita or a Barar, the clans intermarried

and interdined. These restrictions have, however, been modified since 1875. The Barar clan live principally in the Todgarh Tahsil. Enquiries made in that Tahsil show that the Rawats there gave up intermarrying 20 years ago with Merāts. stopping of such marriages compelled Merāts to seek husbands for their girls elsewhere. So now Merāts marry Merāts. Chāng, Lūlwa and Jhāk are full of such marriages. It was by a mere chance that one of the descendants of Anhal embraced Muhammadanism and so introduced the religion into the district. The plant was an exotic which was compelled to struggle along as best it could. Even the bigot Aurangzeb made no attempt tocompel the inhabitants, by fire and sword, to adopt his religion. No Mullas or Maulvis sprang up in Merwara to instruct the Merats in the religion which they had adopted. Under these circumstances, it is matter for small wonder that Islam never gained ground in the district, and that those who profess the Muhammadan religion have always been in the minority. It is natural also that the Merāts, with their vague notions of the tenets of their religion and with no desire to make proselytes from their Hindu brethren, should continue the social customs of the majority of the inhabitants of Merwara, with many of whom they had a common ancestor and with the majority of whom they had always intermarried and interdined. The fact of the matter is, that the difference in religion had hitherto been one in name only. The Hinduism of the Rāwats, like the Islām of the Merāts, is of a very vague and undefined description. The isolated position of Merwara and its physical features have prevented it from being exploited by Hindu Fakirs and Muhammadan Mullas, disseminating the tenets of the Brahmanical and Muhammadan faiths. Move through the Merwara district, and stately Hindu temples and Muhammadan

mosques will not meet the eve. They are conspicuous by their absence. The ordinary Rawat worships incarnations of Siva. such as Mātāji and Bhairūnji, and talks of Parameshwar in a vague way, without a clear understanding as to who Parameshwar "The Sarkar is our Parameshwar," was the answer once returned by a number of Rāwats, who were asked who Parameshwar was. As for the Merats, they resort to circumcision and bury their dead, but, beyond this, it is doubtful whether they pay any attention to the tenets of their faith. In physique, habits and personal appearance, the Rawats and Merats are alike. Their dress is similar, and it is only the experienced eye which can detect, by small difference in their clothes, whether a Rāwat on a Merāt is being addressed. For instance both Rāwats and Merāts will wear a bakhtarī, a dhotī and a turban, which appear to be exactly similar; but the bakhtari (jacket) worn by the Merats will open on the left, that worn by the Rawats on the right.

9. Constituted as the Merwāra clans are, it is hardly likely

The influences which have brought about the movement in its present form and the contention of each clan.

that the elements of disintegration would be found within the house. Outside influences have been at work to bring about the present state of affairs. As far back as 1875 Mr. (Now Sir James) La Touche recorded in his Gazetteeer of Ajmer-Merwāra that a tendency was apparent on the part of the Merāts to abandon their ancient customs

and assimilate with orthodox Muhammadans, while among the Rāwats of Todgarh the tendency was to adopt the rules of Brāhmanism, as practised by the Rajputs of surrounding Native States. For some 25 years these tendencies appear to have lain more or less dormant, after which a series of events occurred, which have brought about a complete upheaval of the existing social customs of the clans. A good deal of feeling has been created on both sides, and the popular belief is that the present movement has been, and is being, fostered by those who enlist in regiments of the Indian Army, where they find themselves in anomalous positions besides orthodox Hindus and Muhammadans. Evidence is not wanting that the Brahmanical influence has been stronger than that of Islam, and the Rawats are, in reality, fostering the movement. Each clan seeks to throw the responsibility on to the other. The Rawats contend that the movement has been brought about by the Merats giving their daughters in marriage to Muhammadans of an undesirable class, and by marrying within degrees of relationship which are clearly prohibited. The beef-eating propensities of the Merāts are also mentioned as another item in the programme to which the Rawats object These practices, which are, they say, abhorrent to them, have increased very much of late, and they only want the Merāts to abandon them and all will be well. The Merats, on their part, contend that they have not departed from their old-established customs as regards hose to whom they give their daughters in marriage or as regards

the degrees of relationship within which they marry, or in the matter of beef-eating, and that the rupture has been brought about by the Rāwats who want themselves considered "Rājputs." situation as sketched by the people themselves is:-

(i) The general belief is that the movement is being fostered by those who have served or are serving in regiments, and this is the outside influence which has tended to bring about a rupture.

(ii) The Rawats condemn the matrimonial practices and beefeating propensities of the Merāts, and say that the extent to which these practices have increased of late is the cause of the dispute.

(iii) The Merāts deny the foregoing contention and say that the Rawats have brought about the dispute by wanting

to be considered 'Rājputs.'

It now remains to be seen what evidence has been produced in support of each of the above points.

In order to be able to form an opinion as to what influences, if any, have been exerted by men The regiments who have served or are still serving in which enlist Merregiments, it is necessary to see which wāra clans. regiments in the Indian Army enlist Merwara clans and what their organization is.

There are five such regiments:—

(i) The 44th Merwāra Infantry.

(ii) The 119th Rājputāna Infantry. (iii) The 120th Rājputāna Infantry. (iv) The 122nd Rajputana Infantry.

(v) The 43rd Erinpura Regiment.

Numbers (i) and (v) are fixtures at Ajmer and Erinpura. Numbers (ii), (iii), and (iv) are stationed at places in the Western Command. The 119th, 120th and 122nd are each composed of two companies Gūjars (Western Rājputāna), two Companies Mers 1 (Western Rājputāna), two companies Rājputs (Eastern Rājputāna and Central India), and two companies Hindustāni Muhammadans. The 43rd Erinpura Regiment has about 200 Mers and Merāts. while the 44th Merwara Infantry (late Merwara Battalion) is composed entirely of Merwara clans. This regiment stands by itself, and a brief history of it will, perhaps, not be out of place. The regiment was raised in June 1822 by Captain Hall, who was then in charge of Merwara, as part of the policy whereby the wild clans of the district were reclaimed from their predatory habits. It was originally called the "Merwara Local Battalion." In 1858 a second battalion called the "Mhair Regiment" was raised for services in the Mutiny. In 1860 the two battalions were amalgamated into what is known as the "Mhairwara Military Police

Includes Rāwāts and Merāts.

Battalion" and continued under this name till 1871, when it was reorganised under the name of the "Merwara Battalion," under which designation it continued till 1903, when, on the renumbering of the Native Army, it became the 44th Merwara Infantry. It has always been composed entirely of Rawats and Merats, and no distinction was held between the clans until 1903, when the dispute assumed its present aspect, and orders were received that the regiment was to be composed of four companies Mers and four companies Merāts. These orders were recently modified and the organization of the regiment is now six companies Mers and two of Merats. The right wing of the regiment went to Mhow for some six months in 1902, and, in the same year, some men of both clans went with the Coronation Contingent from the regiment. The 119th, 120th and 122nd Infantry move about in relief along with other regiments. These regiments have been enlisting men from Merwara since 1887. It is, therefore, clear that the Merwara clans have, during the last 17 years, come in closer contact with the various castes and creeds to be found in India than they did formerly. It would be only natural that they, with their vague religious ideas, should, in the course of time, be influenced by the orthodox followers of Hinduism on one hand and of Islam on the other, and should each strive to be considered orthodox followers of Hinduism, or Muhammadanism, in order to be able to free themselves from a social state which they both found anomalous. belief that the outside influence which has caused the rupture has come from regiments is, therefore, based on reasonable grounds. To be able, however, to grasp the movement, it is necessary to go back to 1875-in which year Mr. (now Sir James) La Touche wrote his Gazetteer of Ajmer-Merwara.

The progress of events from 1875 to 1900.

25 years after Sir James La Touche wrote, the tendencies he indicated appear to have made but little or no progress. Outside influences had not been brought to bear on the clans, and Rāwats and Merāts inter-

married and interdined or not according to their personal inclinations. About 1900, however, commenced a series of events which turned the scales, and it was about that year in which the question began to assume its present aspect. And here it becomes necessary to examine the contentions of the two clans.

12. As has already been stated, the Rāwats contend that the matrimonial practices and beef-eating propensities of the Merāts are responsible for the rupture. As regards the former, they state that the Merāts gave their daughters to low-class Muhammadans and marry within degrees or relationship which are prohibited. These statements are put forward, in the first instance, as if these practices were something quite new, but if those who make them be examined ever so lightly, they are compelled to admit that practices which they now apparently object to so strongly, have been going on for years, and they then endeavour to screen themselves behind the contention that they have increased to a very

great extent in recent years, and this has brought about the rupture. The Merāts reply to these allegations that they still give their daughters in marriages to the same Muhammadan families as in the past, and that they have always married within degrees of relationship (i.e., cousins) to which the Rawats now object. The enquiries made go to show that the Rawats have by no means substantiated their case. Rāwats of various villages from the Todgarh Police circle on the south to villages in the Pushkar, Gegal and Srinagar police circles in the Ajmer district on the north have been questioned as to the reasons of the split. They all give undesirable matrimonial alliances and the beef-eating propensities of the Merāts as the reasons, and say they gave up marrying at periods varying from 20 years ago onwards, for these same reasons. The matrimonial customs and beef-eating propensities of the Merāts are, on the showing of the Rawats themselves, nothing new, and, it seems clear, that what the Rāwats term reasons are really excuses. Some of them have stated in the most barefaced manner that Merāt girls were married to "Mochis" and "Regars" and other unclean sects in Ajmer and other places. These allegations have, on enquiry, been found inaccurate, and would appear to be wholly unjustified. Merāt girls are, as a rule, married to Merāts, while some are married to Khādims and such like in Ajmer. It is true that Muhammadans of high social standing will not intermarry with Merāts, though they will allow their "Golās" or sons from concubines to marry Merāt girls, because they cannot get wives from among good Muhammadan families for such sons. On the other hand, the Merats certainly do not degrade themselves to the extent of giving their girls in marriage to Mochis and other unclean sects. Numerically the Merats are much inferior to the Rawats. By the time their own brethren, Khādims and such like have been provided with wives, the number of marriageable Merāt girls must be very small. It is, therefore, probable that Rāwat-Merāt marriages l have never been very numerous. Isolated cases occur even now; one occurred in April 1904 in Chang, but they are not acceptable to either clan. To whomsoever the Merats marry their girls it has not been proved that they do so to persons lower in the social scale than the Rāwats themselves are The statement of the Rāwats as regards Merats marrying their girls to unclean Muhammadan sects has been found inaccurate. The conclusion, therefore, as regards the contention of the Rawats on the matrimonial aspect, appears to be clearly against them. The beaf-eating contention is not worth serious discussion. The Rawats certainly have not progresssed along the paths of orthodox Hinduism to a degree which would justify their looking upon beef-eating with the same horror as a Brāhman. The beef-eating cry is a palpable excuse. The Rāwats have failed to substantiate their case. Per contra they appear to

<sup>1</sup> Many men (Rāwats), however, in the 44th Merwara Infantry, are reported to be married to Merāt women.

have made every effort to exaggerate it. The Merāts say they do not give their girls in marriage to new sects or marry them within closer degrees of relationship than before, and this has not been controverted by the Rāwats.

12. Now as to the contention of the Merāts, that the Rāwats

The contention of the Merāts.

have brought about the rupture by wishing to be considered Rājpūts. To arrive at a conclusion, a series of events since 1900

have to be examined.

The social dispute between Rāwats and Merāts in a regiment about 1900.

About 1900, as far as has been ascertained, occurred the first of a series of events which, if not the origin of the movement in its present shape, gave it a considerable impetus. About that year a question arose in one of the regiments, which enlist men from Merwāra,

regarding the social customs of the two clans, which appears to have developed into something approaching a dispute. It has not been possible to ascertain precisely what occasioned the difference, but accounts appear to agree that, while Merats were allowed to eat and smoke with orthodox Muhammadans, the Rawats, who claimed to be Hindus, and yet interdined with Merats, were excluded by orthodox Hindus and Muhammadans alike. Thus, while the Merats succeeded in getting themselves recognized as Muhammadans to an appreciable extent, apparently, the Rāwats were recognized by the followers of neither religion. They thus found themselves in a very anomalous, not to say awkward, position as compared with the Merats, and their position was, no doubt, the theme of much discussion and comment and, perhaps, banter in the regiment. At this turning point in the history of the clans, the Merāts, by being allowed to smoke and dine with orthodox Muhammadans, would appear to have gained a decided advantage. The natural course for the Rawats would be to do their utmost to free themselves from so invidious a position. Their brethren had, to some extent, got themselves recognised as Muhammadans. It, therefore, became incumbent that they should make efforts to get themselves recognised as orthodox Hindus. How the dispute was for the time being settled is by no means clear, but that it gave rise to a situation such as that sketched above seems certain. The advantage gained by the Merāts was a matter which the Rāwats could certainly not forget or forgive. Here, at any rate, was "the little rift within the lute." And now we may move on to the next step in the series of events under discussion.

The influence of Brahmanism and Islām.

The influence of Brahmanism and Islām.

The influence of Brahmanism and Islām.

The Rāwats found themselves at Prayāg, a holy place, where Brāhmanical influences are strong, which, no doubt, were brought to bear

on them to a considerable extent. On the other hand, the Merāts came under the influence of Maulvīs and Mullās to a greater

extent than they had done before. Thus two antagonistic and powerful influences were brought to bear on the clans, whose difference in religion, had, so far, been one simply in name. The breach which had been caused by the unfortunate difference referred to was widened. Rāwats and Merāts ascended one more rung on the ladder of separation. The Brāhmanical influence was, apparently, the stronger, and events now commenced to move forward with a certain degree of celerity. Matters had gone too far to be allowed to stand still any longer.

15. The time had come for the Rāwats to decide whether they

The Meeting of Rāwats in the Srinagar Police Circle in Ajmer in April 1902.

would continue their old social customs or not, and those who were engineering the movement decided, it seems, on the latter course. It became necessary to show by some unmistakeable action that ancient customs were to be abandoned. Accordingly,

on the 18th April 1902, a meeting of about 250 Rāwats, some of whom were from Merwara, took place in the Srinagar Police Circle, in the Ajmer district, at which it was proposed that Rāwats were not to give their daughters in marriage to Chītās, of whom Merats are a subdivision, as they were Muhammadans. meeting appears to have been more of a demonstration than anything else. It was not convened with the idea of laying down rules for future guidance, which were to have the force of law, so to speak. It did not result in the dispute assuming an acute The delegates met and stated Rāwat-Chītā marriages were to stop, but beyond talk of this nature, no decided action was the outcome of the meeting. So much, however, may be taken for certain, that the meeting was brought about by outside influences: it was the precursor of other meetings of a similar and more decisive nature, and was significant as indicating that the controversy had passed from the region of thought to that of action.

16. In May 1902 the Coronation Contingent went to England. A detachment from the 44th Merwara In-The Coronation fantry, then the Merwara Battalion, consist-Contingent. ing of members of both clans, formed part of it. The journey to and from, and the sojourn in, England appears to have accentuated the difference. The Rawats, it is said, gave themselves out as "Rājputs," but were twitted by orthodox Hindus from other regiments, who also formed part of the contingent and who, not unnaturally, expressed surprise at people who professed to be "Rajputs," eating their food with their clothes on instead of bare-headed and wearing only a dhoti. Furthermore, the Rāwats and Merāts used to eat together, it is said, and here again orthodox Hindus wanted to know how "Rajputs" could eat with those who professed Muhammadanism. Questions which were asked were distinctly awkward, and the Rawats, it seems, were made to feel, more than ever, that, although they professed Hinduism, they were, really, in the matter of caste and religion, neither "fish, flesh, fowl, nor good red herring" in the eyes of orthodox Hindus. Then again, it is said, the Merāts refused to eat the meat of the sheep and goats provided, because the animals had not been hallāled. The Rāwats, possibly, regarded this as an attempt on the part of their brethren to pose as better Muhammadans than they really were, and perhaps thought it was done on purpose. But, whatever the relations between the Rāwats and Merāts were, on the journey to and from and during their stay in England, the Rāwats appear to have realised more strongly than before that while the Merāts had, at any rate, some observances which were in conformity with orthodox Muhammadanism, they (Rāwats) had uncommonly few, if any, which conformed to orthodox Hinduism. The breach was widened still more and it became necessary for Rawāts to take further steps to get themselves recognized as orthodox Hindus.

The anti-kine-killing letters.

Contingent from the 44th Merwāra Infantry returned in August 1902. In the early part of September 1902 anti-kine-killing letters, similar to those which were circulated in Bengal and the United Provinces a few years back, were put into circulation. The letters were in Hindī, and the following is an English translation:—

"A voice has been heard by Sri Jagannāthjī, saying, if any Hindu sells a cow to a butcher, or enters into any financial transaction with any butcher, I will go away to Ceylon. If anyone receiving this letter does not make five copies of it and distribute them he will be guilty of killing cows."

The circulation of these letters spread rapidly, but the movement was very closely watched by the police, and, by degrees, the circulation died out. The letters created no feeling among the populace generally, but, there are some points connected with the movement which appear to have an important bearing on the Rāwat-Merāt Controversy:—

(i) The villages in which the letters were first found appeared to indicate that the movement was one towards ortho-

dox Hinduism on the part of the Rawats.

(ii) The letters were put into circulation soon after the return of the Coronation Contingent. This lends colour to the idea that Rawats, who had been to England, had something to do with the movement at its commencement. If orthodox Hindus of Ajmer had put the letters into circulation, they would have done so in 1899-1900, when the famine was raging, and, for some months, hundreds of cattle were killed daily at Naşîrābad for the sake of the hides. For the purposes of the question under discussion, it is useful to know that Rāwats were concerned in the circulation of the letters very early in the day, and this at a time when some of them had recently returned from England, after a journey and sojourn in which the influence of orthodox Hinduism had been brought to bear on them with a considerable amount of force.

18. For some months, after the circulation of the anti-kinekilling letters, matters remained dormant. The Dadalia Con-In May 1903 a large meeting of Rawats was ference. held at Dadāliā in the Todgarh Police Some Rāwats will maintain that the meeting Circle in Merwāra. was held merely to re affirm social customs which had been dislocated by the famine of 1899-1900. Merāts will say that letters were circulated at the Conference requesting Rawats to make their wives and daughters dress in Rajput fashion, but, whatever the meeting was held for, it set the whole community by the ears and raised the question in its present acute form. At the Dadāliā Conference it was laid down, in the most decided manner, that the former social intercourse was to cease, while the allegation that efforts were made at the Conference to make Rawat women dress The Conlike Rajputnis is by no means devoid of foundation. ference was presided over by a Jogi of Sāran in Mārwār, who is a priest of the Rawats, and, ever since it was held, the whole social organization of the Merwara clans has been upset. have been flying about, each party has accused the other of unworthy acts, and many harsh things have been said on both sides. A more unfortunate occurrence than the Conference at Dādāliā is not to be found in the annals of Merwara.

19. Since the Dadāliā Conference a few incidents have taken

Events since the Dadālia Conference.

place which claim brief mention. In September 1903 a meeting of Rāwats and Merāts was held at Beāwar at the time of the Tejājī Fair with a view, apparently, of

settling the difference, but no understanding was arrived at owing to the terms imposed by each party, which will be referred to hereafter being well nigh impossible. An occasional letter has been circulated, saying, Rāwats are not to marry into Merāt families. There can be no question but that the social organization of the Merwāra clans has been seriously upset.

20. The foregoing series of events indicates that since 1900

A review of the foregoing events and the conclusion as to the contention of the Merāts.

Brāhmanical influence, in a powerful form, has been brought to bear on the Rāwats serving in regiments, and they, in their turn, have sought to influence their fellow clansmen in their villages. The difference in the regiment (para. 13) showed clearly that the

Merāts adapted themselves to the Muhammadan faith and were, to a certain extent, recognized as Muhammadans by orthodox followers of the Prophet. The Rāwats, on the other hand, could not gain admission to the more rigid folds of orthodox Hinduism. They called themselves Hindus, but were not recognized as such in the regiments in which they served. Ever since the movement sprang up in its present shape, the Brāhmanical influence has been stronger than that of Islām and has been impelling the Rāwats to get themselves considered orthodox Hindus. The majority of them claims a Rājput (Chauhān) ancestry, and, in fact, have commenced to record themselves as Chauhāns, when entering service at a

distance from their homes. If they could only make themselves out Rājputs, and be recognized as such, their hearts' desire would be attained and the matter would be settled. They do not appear to have recognized the difficulties which would beset the realization of their dreams. They started on their course without properly feeling their way, and succeeded in upsetting the social organization of the Merwāra clans at the Dadāliā Conference, without bettering their own social position in the slightest degree. A review of the situation since 1900 shows that the contention of the Merāts, that the rupture has been brought about by the Rāwats wanting themselves considered "Rājputs," has a considerable amount of force in it. At any rate, the Merāts have gone a much longer way towards proving their contention than the Rāwats have theirs.

21. Such is the history of this remarkable rupture as gleaned

The attitude of the people generally, the relations between the parties and probable consequences of the quarrel.

from Rāwats and Merāts themselves. The quarrel is, naturally, between those who live in Merwāra principally. There are some Chītā and Rāwat villages in Ajmer, but their inhabitants have played a minor part in the matter. The attitude of the people of Merwāra towards the rupture is, generally speaking, one of apathy. They know of the

quarrel, they feel the outside influence, but they are too much concerned with their daily avocations to give the subject much thought. The controversy is, to all intents and purposes, confined to those villages which provide men for regiments, though, of course, meetings like that at Dadalia have helped to spread the difference. The relations between the parties are, naturally enough, not cordial, but while the Rawats are agitating with the sole object of getting themselves recognized as Rajputs, the Merats are not much put out about the social aspect. The religious feeling is not strong enough yet, on the part of the Merāts, at at any rate, to bring about any untoward consequences, but the harmony which formerly prevailed among the Merwara clans has been shaken to a considerable extent, and the social organization upset. These consequences are, in themselves, regrettable. would be a thousand pities if the social organization of the Merwara clans, as it existed prior to their quarrel, assuming an acute form, were swept away. It was an organization peculiarly its own and conduced to harmony and peace throughout the district. For the Rāwats to try and destroy this desirable state of things, by a ludicrous attempt to get themselves recognized as Hindus of high social standing, is very unwise.

Chances of reconciliation.

Chances of reconciliation.

Chances of reconciliation.

Some influential men on both sides appear to think reconciliation is possible. Rāwats and Merāts discussed the question at the meeting held at the Tejājī Fair, at Beāwar, in September 1903. Each side imposed certain conditions. The Rāwats wish the Merāts to—

(i) Cease intermarrying among themselves.

(ii) Cease giving their daughters in marriage to Muhammadans.

(iii) Cease eating the flesh of cows or buffaloes.

(iv) Cease giving their pipes to Muhammadan Fakīrs to smoke, 1

The Merāts, on their part, required the Rāwats to-

(i) Cease eating pig.

(ii) Cease eating animals killed by violence, i.e., otherwise than hallāled.

If the Merāt-Kāṭāts and Merāt-Gorāts² could be induced to come to an understanding a reconciliation might possibly be effected, but, it is alleged, that there are some mischief-makers about, who are preventing a reconciliation. A committee of influential, broadminded, tolerant men of both clans, with a competent President, might possibly effect a good deal. The Merāts have, so far, maintained a very reasonable attitude as regards the quarrel. The Rāwats, by holding meetings such as the Dadāliā one, have agitated in a manner very distasteful to the Merāts. With skilful and patient handling the clans may yet be induced to forget and forgive and return to their former social customs, but the chance of a reconciliation now seem very remote. It may be noted that the Merāts have not held a single meeting so far after the fashion of the Rāwats.

Another condition the Rawāts wish to impose is said to be that a Rawāt woman married to a Merāt should be burned at death. They have always been buried.

<sup>&</sup>lt;sup>2</sup> The Merat-Gorats are said to be the keenest on separation of all the various Rawat clans. Enquiries in Merwara have not revealed that they were agitating more than others.

31. The Revenue Regulations of Aurangzib (with the Persian texts of two unique farmāns from a Berlin Manuscript.)—By Jadunath Sarkar, M.A., Professor, Patna College.

## INTRODUCTION.

A Persian manuscript of the Berlin Royal Library (Pertsch's Catalogue, entry No. 15 (9) ff. 112, b.-125, a. and 15 (23) ff. 267, a.-272, a.) gives, among other things, two farmans of the Emperor Aurangzib. I have not met with any other copy of these documents in any European or Indian public library; the first (the farmān to Muhammad Hāshim) is absolutely unique; but of the other (the farman to Rasik Das) a second but very incorrect copy was presented to me by Maulvi Muhammad 'Abdul-'Aziz of Bhitri Sayyidpur, District Ghazipur, the agent of Mr. W. Irvine, I.C.S. (retired). The Berlin MS., though beautifully written, is often incorrect. The text of the first farman is accompanied by a highly useful commentary in Persian, written on smaller leaves placed between but paged consecutively. In my edition of the text, every important departure from the original has been noted, but evident slips have been silently corrected. In two places good readings could be secured only by departing very far from the text; but this I have not ventured to do, preferring to leave the original unaltered. Photographic reproductions (rotary bromide prints) of the Berlin MS. were secured for my work.

For the meanings of Indian revenue terms I have consulted (1) British India Analyzed (ascribed to C. Greville), London, 1795, Part I.; (2) Wilson's Glossary; and (3) Elliot and Beames's Supplementary Glossary, 2 vols. The last two are likely to be accessible to the reader; and I have referred, in my notes, to the first work only, partly on account of its extreme scarcity and partly because it was nearest in time to the period of Mughal rule. The Berlin MS. will be called the A Text, and the Ghazipur one the

B Text. The punctuation of the text is my work.

## TRANSLATION.

Farmān of the Emperor Aurangzib-'Alamgir, in the year 1079 A.H.,¹ on the collection of revenue.

[112, b.] Thrifty Muhammad Hāshim, hope for Imperial

favours and know-

That, as, owing to the blessed grace and favour of the Lord of Earth and Heaven, (great are His blessings and universal are His gifts!) the reins of the Emperor's intention are always turned to the purport of the verse, "Verily God commands with justice and benevolence," and the Emperor's aim is directed to the promotion of business and the regulation of affairs according to the Law [113, a] of the Best of Men, (salutation and peace be on him and

his descendants, and on his most virtuous companions!)—and as the truth of [the verse] "Heaven and earth were established with justice" is always acceptable in the eyes [of the Emperor] as one of the ways of worshipping and honouring the Omnipotent Commander, and friendliness and benevolence to high and low is the aim of the illuminated heart [of the Emperor],—.

Therefore, at this auspicious time, a farman of the high and

just Emperor is issued,-

That officers of the present and future and 'amils of the Empire of Hindustan from end to end, should collect the revenue and other [dues] from the mahals in the proportion and manner fixed in the luminous Law and shining orthodox Faith, and [according to] whatever has been meant and sanctioned in this gracious mandate in pursuance of the correct and trustworthy Traditions,—

And they should demand new orders every year, and consider delay and transgression as the cause of their disgrace [113, b.] in

this world and the next.

[Commentary, 113, b margin:—The purport of the introduction is only the transaction of affairs and threatening with [the anger of] God for the performance of the royal order and for the sake of [according] justice to the officers, and benevolence mercy and convenience to the peasants in the collection of revenue, etc., agreeably to the Holy Law.]

First.—They should practise benevolence to the cultivators, inquire into their condition, and exert themselves judiciously and tactfully, so that [the cultivators] may joyfully and heartily try to increase the cultivation, and every arable tract may be brought

under tillage.

[Commentary, 113, b margin:—Concerning what has been written in the first clause the wish of the just Emperor is, "Display friendliness and good management which are the causes of the increase of cultivation. And that [friendliness] consists in this that under no name or custom should you take a dām or diram above the fixed amount and rate. By no person should the ryots be oppressed or molested in any way. The manager of affairs at the place should be a protector [of rights] and just [in carrying out] these orders."]

Second.—At the beginning of the year inform yourself, as far as possible, about the condition of every ryot, at to whether they are engaged in cultivation or are abstaining from it. If they can cultivate, ply them with inducements and assurances of kindness; and if they desire favour in any matter show them that favour. But if after inquiry it is found that, in spite of their being able to till and having had rainfall, they are abstaining from cultivation, you should urge and threaten them and employ force and beating. Where the revenue is fixed (Kharāj-i-muazzaf) inform the peasants that [115, a] it will be realised from them whether they cultivate or not. If you find that the peasants are unable to procure the implements of tillage, advance to them money from the State in the form of taqāvi after taking security.

[Commentary, 114, a:—The second clause proves that the only business of peasants is to cultivate and so pay the revenue of the State and take their own share of the crop. If they lack the materials of cultivation, they should get taqāvi from the Government, because, as the king is the owner [of the land], it is proper that when the cultivators are helpless they should be supplied with the materials of agriculture. The emperor's desire is the first. And threatening, beating and chastisement are [ordered] with this view that, as the king is the owner, [and] always likes mercy and justice,—therefore it is necessary that the ryots too should, according to their own custom, make great exertions to increase the cultivation, so that the signs of agriculture may daily increase. This thing is the cause of the gain of the State and the benefit of the ryots.]

Third.—About fixed revenue: If the peasant is too poor to get together agricultural implements and runs away leaving the land idle, give the land to another on lease or for [direct] cultivation [as a tenant at will?], and take the amount of the revenue from the lessee in case of lease, or from the share of the owner in case of [direct] cultivation. If any surplus is left, pay it to the owner. Or, substitute another man in the place of the [former] owner, in order that he may, by cultivating it, pay the revenue and enjoy the surplus [of the produce.] And whenever the [former] owners again become capable of cultivating, restore the lands to them. If a man [115, b] runs away leaving the land to lie idle,

do not lease it out before the next year.

[Commentary, 114, b:—In what has been written about giving lease, entrusting to cultivators for [direct] cultivation, taking the amount of the revenue from the lessee [in case of lease] and from the owner's share in case of [direct] cultivation, and paying onehalf to the malik, i.e., to the former cultivator,—the word malik (owner) does not mean 'proprietor of the soil' but 'owner of the crop in the field'; because, if the word 'owner' meant 'proprietor of the soil,' then the owner would not run away through poverty and want of agricultural materials, but would rather sell his land and seek relief in either of these two ways: (i) throwing the payment of Government revenue upon the purchaser, (ii) devoting the sale-proceeds of his owner's right to the removal of his own needs. As for the words "substitute another man for the [former] owner," the rightful substitute for a proprietor can be none but his heir, and this is the distinctive mark of ownership. Therefore, the word 'substitute' as used here means 'a substitute for the owner of the crop.' But in the case in which a man, after spending his own money and with the permission of Government, cultivates a waste land which had paid no revenue before, and having agreed to its assessment for revenue pays the revenue to the State,—such a man has [true] tenant's right to the land he cultivates, because he is the agent of reclaiming the land. The real owner is he who can create a substitute for the owner, i.e., the king. It is a well-known maxim, "Whosoever wields the sword, the coins are stamped in his name." As for the expression "pay

half [the produce] to the owner, and do not lease out the field to anyone else for a year afterwards,"—the intention is that, as the fixed revenue (Kharāj-i-muazzaf) is not affected by the productive or barren nature [of the year], in both cases the cultivator has to pay the revenue in cash. As the Emperor likes leniency and justice, [he here orders] that the officers should kindly wait for one year [for the return of a fugitive ryot] and, in the case of [direct] cultivation or lease, they should pay to him any surplus left above

the Government revenue.

Fourth. - Inform yourself about the tracts of fallow (uftāda) land which have not returned to cultivation. If they be among the roads and highways, enter them among the area (? banā) of towns and villages, in order that none may till them. And if you find any land other than these, which contains a crop that stands in the way of its tillage, then do not hinder [the cultivation] for the sake of its revenue. But if it be capable of cultivation, or really a piece of land fallen into ruin  $(b\bar{a}ir)$ , then in both these cases, in the event of the land having an owner and that owner being present and able to cultivate it, urge the owner to till it. But if the land has no owner, or if the owner is unknown, give it to a man who can reclaim it to reclaim. Thereafter, if the lessee be a Muhammadan and the land [117, a] adjoins a tract paying tithes, assess tithes on it; if it adjoins a rent-paying tract, or if the reclaimer of the land be an infidel, lay the full revenue on it. In case the [standard] revenue cannot be realised, as prudence may dictate, either assess the land at something per bigha by way of unalterable rent, -what is called Kharāj-i-muqat'at, -or lay on it the prescribed revenue of half the crop,—which is called Kharāii-muqasema. If the owner be known, but is quite unable to cultivate it, then if the land had been previously subject to Kharāji- muqasema, act according to the order issued [for this class of revenue]. But if it be not subject to Kharāj-i-muqāsema or is not bearing any crop, then do not trouble [the owner] for tithes or revenue. But if he be poor, engage him in cultivation by advancing taqāvi.

Commentary 116, a: - Fourth clause: "When the land forms part of highways or is really waste or owned by a person unknown, or when the owner is quite unable to till it," and other expressions. In all these cases the word owner is used in the former sense. And there is a possibility of ownership being used in the latter sense too, as described before. There are many proofs, more manifest than the Sun and more evident than yesterday, in support of 'owner' being used for the king. For the sake

of brevity they have not been mentioned here.]

Fifth.—As for a desert tract (bādia), if the owner be known, leave it with him; do not give possession of it to others, [117, b]. If the owner be not known, and there is no chance of 'audāt' in the land, then, as policy may dictate, give the land to whomsoever

<sup>1</sup> Bilmokta-'land held at a low unalterable rent.'-(Brit. Ind., p. 151.) 2 zeturn.

you consider fit to take care of it. Whosoever makes it arable must be recognised as the owner of the tract and the land should not be wrested from him. If the land contains articles of ' $aud\bar{a}t$  (?), do not issue any order that may hinder the ' $aud\bar{a}t$  in the land; and as for the gain from the land, forbid sowing, etc.; and do not let anyone take possession of it, and recognise none as its owner.

If an entire 1 tract of waste land has been transferred for any reason, and a contrary state of things is brought about by a different cause, then regard the land as belonging to the man up to the time till when it was in his possession, and do not give

possession of it to anybody else.

[Commentary, 116, b:—In the fifth clause it has been written: "If the owner of a desert tract be present, entrust it to him; otherwise, give it, as advisable, to a fit person who may reclaim it to cultivation; recognise him as its owner, do not wrest it from him,—if there is no probability of 'audat in it," and other things. Here the word 'audāt has two meanings: (i) that the land is likely to contain mines, and (ii) that the [original] owner may return to The second alternative which has been stated before, is clearly evident here, "Whosoever makes a land fit for cultivation should be recognised as its owner." It means that, as with the permission of the ruler he cultivates a waste unproductive land and benefits the State, therefore he has a claim to the land based on his services. Hence the imperial order runs: "Whosoever makes a land fit for cultivation should be recognised as its owner, and the land should not be wrested from him." Then it is evident that none else can have any right to the land. "As for the gain from the land, etc."-i.e., if hereafter someone else sets up a claim to ownership, he should not be given possession of the profit from this land, such as the price of crops or [the gain from] gardens, tanks, and such things. The reason is that this land had been paying no rent before, and therefore the man who has reclaimed it and none else has a right to it.

"And if a tract of waste land, etc."—i.e., if a tract of waste land is in its entirety transferred to another person, either on account of its having had no owner, or by reason of the man having reclaimed the land by his own exertions from unproductiveness and incapacity to pay revenue, then the man who first owned it and from whom it was transferred to the former, has a right to the price of the produce of the transferred land up to the time when it ceased to produce anything. This produce had no connection with the man to whom the land has been transferred, because the

land belongs to him only from the time of the transfer.]

Sixth.—In places where no tithe or revenue has been laid on a cultivated land, fix whatever ought to be fixed according to the Holy Law. If it be revenue, fix such an amount that [119, a] the ryots may not be ruined; and for no reason exceed half [the crop], even though the land may be capable of paying more. Where the

entire, undivided.

amount is fixed, accept it, provided that if it be Kharāj, the Government share should not exceed one-half, lest the ryots be ruined by the exaction. Otherwise reduce the former Kharāj and fix whatever the ryots can easily pay. If the land is capable of

paying more than the fixed [amount] take (?) more.

[Commentary, 118, a:—In the sixth clause: The wish of the benevolent Emperor is that the revenue should be so fixed that the peasantry may not be ruined by payment of it. The land belongs to the king, but its cultivation depends on the ryots; whenever the ryots desert their places and are ruined, i.e., when they are crushed by the excessive exactions and oppression of the officers, one can easily imagine what the condition of the cultivation would be. Hence urgent orders are issued in this clause. And the statement in the last portion, "If the land is capable of paying more than the fixed amount, take more," is contrary to the order in the first portion of the same clause. Probably it is an error of the scribe. He must have imagined that as this passage is insistent, it ought to be read as 'take.' The reason is that in the first portion there is a total prohibition [of taking more revenue], "although it can pay more, do not take more than one-half," and. again here the Emperor orders "do not take more than the prescribed amount," such an order strengthens the first order, nay more, the repetition of the order is for the purpose of strong insistence.

Seventh.—You may change fixed revenue (muazzaf) into share of crop (muqāsema), or vice versa, if the ryots desire it;

otherwise not.

[Commentary: —The order for changing one kind of revenue into another at the wish of the ryots is for their convenience.]

Eighth.—The time for demanding fixed revenue is the harvesting of every kind of grain. Therefore, when any kind of grain reaches the stage of harvest, collect the share of revenue suited to it.

[Commentary:—The object is, whenever the revenue is demanded at harvest, the ryots may, without any perplexity, sell a portion of the crop sufficient to pay the revenue and thus pay the due of the State. But, if the demand is made before that time, it puts them into perplexity and anxiety. Therefore, the Emperor's order is to seek their convenience.]

Ninth.—In lands subject to fixed revenues, if any non-preventable calamity overtakes a sown field, you ought to inquire carefully, and grant remission to the extent of the calamity, as required by truth and the nature of the case. And in realising [119, b.] produce I from the remnant, see that a net one-half [of the produce] may be left to the ryots.

[Commentary, 118, b:—"If Kharāj-i-muazzaf has been fixed on a land, and a calamity befalls some crop of the land by which it is not totally destroyed, then you ought to inquire into the case,

<sup>1</sup> Text has mahsul, which may also mean 'revenue.'

and deduct from the revenue to the extent of the injury done; and from the portion that remains safe, take so much of the produce (mahsul) that the ryot may have a net one-half"; e.g., ten maunds are [usually] produced in a field; on account of the calamity six maunds only are left [safe], the net half of this is five maunds; therefore, you should take one maund only [as revenue], so that

the net half (viz.) five maunds may be left to the ryot.]

Tenth.—In lands with fixed revenues: If anybody leaves his land untilled, in spite of his ability to till it and the absence of any hindrance, then take the revenue of it from some other [field in his possession.] In the case of fields which have been flooded, or where the [stored] rain-water has been exhausted, or any non-preventable calamity has overtaken the crop before reaping, so that the ryot has secured nothing, nor has he time enough left for a second crop to be raised before the beginning of the next year,—consider the revenue as lost. But if the calamity happens after reaping, whether it be preventable like eating up by cattle or after the calamity sufficient time is left [for a second crop], collect

Commentary:—"If a man holds a land on which Kharāj-imuazzaf has been laid, and he has the power to cultivate it, and there is no obstacle to his cultivating, and yet he leaves it untilled, -then realise the revenue of that land from any other land belonging to the man, because he left his land idle in spite of his being able to till it and there being no obstacle. If any land belonging to the man is flooded or the rain-water which had been dammed up for irrigation of crops gets exhausted, and the crop is ruined, or if any non-preventable calamity befalls his crops, before they have ripened and been harvested, so that he secures no crop nor has he any time left for raising a second crop that year,—then do not collect the revenue. But if any non-preventable calanity overtakes the crop of the man after reaping, or if the calamity takes place before the reaping but enough time is left for a second crop that year, take the revenue (mahsul)," because the calamity happened through his own carelessness after the reaping of the corn. And so, too, "if the calamity happens before the reaping, but time enough is left for another crop," then [as the loss] occurred through his neglect, it is proper to take revenue from him.

Eleventh.—If the owner of a land, subject to a fixed revenue, cultivates it but dies before paying that year's revenue, and his heirs get the produce of the field [121, a] collect the revenue from them. But do not take anything if the aforesaid person died before cultivating and [time] enough is not left that year [for anyone

else to till it].

[Commentary, 120, a: What has been published about "the death of the owner of the land, taking the revenue from his heirs, and not demanding the revenue from the heirs if he died before tilling" is manifestly just; because the land-owner, i.e., truly

<sup>1</sup> B'aze Zamin-See Wilson, p. 69, i. "The Baze Zamin or certain lands set apart for various uses."—(Brit. Ind., p. 276.)

speaking the owner of the crop, died before cultivating, and so it is far from just to collect revenue from his heirs, even though they may have got something from him by way of bequest; for the [true] owner of the land is the king, and the owner of the crop, i.e., the deceased [ryot] died before cultivating, and his heirs have not got anything or crop that may be a ground for [demand-

ing] revenue, so, nothing should be collected from them.

Twelfth.—Concerning fixed assessments: If the owner gives his land in lease or loan, and the lessee or borrower cultivates it, take the revenue from the owner. If the latter plants gardens, take the revenue from the latter. But if a man after getting hold of a Kharāji land denies it, and the owner can produce witnesses, then if the usurper has cultivated it, take the revenue from him; but if he has not done so, take the revenue from neither of them. If the usurper denies [the usurpation] and the owner cannot produce witnesses, take the revenue from the owner. In cases of mortgage (rihan), act according to the orders applicable to cases of usurpation. If the mortgagee has engaged in cultivation without the permission of the mortgager, [121, b] [exact the revenue from the former].

[Commentary, 120, b:—This order may be construed in either of the following two ways, or it will yield no sense: "If the owner of a land under fixed revenue gives his land in lease or loan, and the lessee or borrower cultivates it, realise the revenue from the owner. If the latter has planted gardens on it, take the revenue from him, because he has planted the gardens. If a man after getting hold of a Kharāji land denies it, and the owner has witnesses, then, in the case of the usurper having tilled it, take the revenue from him, but if he has not done so take the revenue from neither of them. If the usurper denies [the usurpation] and (i) the owner has no witness, take the revenue from the owner." This is one construction. The other is (ii) "if the owner has witnesses, take the revenue from the owner," i.e., the usurper denies [the usurpation] and the owner produces witnesses to prove his own cultivation, therefore the owner should pay the revenue.

"In cases of mortgage act according to the orders issued for cases of usurpation. If the mortgagee has engaged in cultivation without the consent of the mortgager, [demand the revenue from the former]," because if the mortgagee engaged in cultivation with the consent of the mortgager, the latter ought to have paid the revenue, because the right to cultivate is [here] included in the mortgage. But if he has engaged in cultivation without the mortgager's consent, he ought to pay the revenue, because the land alone, and not the right to cultivate it, was mortgaged.]

Thirteenth.—About lands under fixed revenue: If a man sells his Kharāji land, which is cultivated, in the course of the year, then, if the land bears one crop only and the buyer, after taking possession, gets enough time during the rest of the year to cultivate it and there is none to hinder him, collect the revenue from the buyer; otherwise from the seller. If it yields two crops, and the seller has gathered in one and the buyer the other, then divide

the revenue between the two. But if the land is [at the time of

sale under a ripe crop, take the revenue from the seller.

Commentary, 122, a:—If a man wishes to sell his land, i.e., the crop of his land, and the purchaser gets sufficient time during the year to cultivate it, take the revenue from the purchaser. it bears two crops, of which the seller has gathered in one and the buyer the other, divide the revenue and collect it from the two parties. If the land be under a ripe crop, take the revenue from the seller, because as the crop is ripe and the seller has sold it with full knowledge, he must have taken the price of the ripe grain.

Therefore the seller should pay the revenue.

Fourteenth.—Concerning lands under fixed revenue: If a man builds a house on his land, he should pay the rent as fixed before; and the same thing if he plants on the land trees without fruits. If he turns an arable land, on which revenue was assessed for cultivation [123, a] into a garden, and plants fruit-trees on the whole tract without leaving any open spaces [fit for cultivation], take Rs.  $2\frac{3}{4}$  upwards (?  $b\bar{a}l\bar{a}$ ), which is the highest revenue for gardens, although the trees are not yet bearing fruit. But in the case of grape and almond trees, while they do not bear fruit take the customary revenue only, and after they have begun to bear fruit, take Rs.  $2\frac{3}{4}$  upwards (?), provided that the produce of one legal bigha, which means 45 × 45 Shah Jahani yards, or 60 × 60 legal yards, amounts to Rs.  $5\frac{1}{2}$ . Otherwise take half the actual produce of the trees]. If the price of the produce amounts to less than a quarter-rupee, -as in the case when grain sells at 5 Shah Jahani seers a rupee and the Government share of the crop amounts to one seer only (?) 1—you should not take less than this [quarter-rupee].

If a man sells his land to a Muhammadan, demand the revenue

in spite of his being a Muslim.

[Commentary, 122, b:-If a man owns a land under a fixed revenue, and builds a house on it or plants a garden of trees that bear no fruit, there should be no change in its revenue, the former revenue should be taken. If a garden is planted on a land which was used for cultivation and on which the revenue of culturable land was fixed, and the fruit-trees are placed so close together that no open space is left for tillage, take Rs. 2-12, which is the due (hāsil) of gardens, even while the trees do not bear fruit. But in the case of grape and almond trees, the [usual] revenue is taken while they have not begun to bear fruit, and afterwards the due (hāsil) of gardens. But if this due of gardens, which is fixed at Rs. 2-12—on the ground that the total yield (? rab'a) of a legal bigha including the owner's share, may reach to Rs. 5-8—does not reach that amount, then take half the actual produce as revenue.2

<sup>1</sup> Is not this a very round-about way of saying that when the revenue in kind is worth only to of a rupee, a quarter-rupee should be regarded as the minimum assessment?

<sup>2</sup> In revenue by division of crops, the State took only \frac{1}{2} of the gross produce in the case of grain; but 1 to 1 in the case of opium, sugar-cane, vine plantain, and cotton. (Brit. Ind., p. 179)

But if the price of this half-share of the produce be less than As. 4—as, in the case of grain, if you get one seer in five Shah Jahani seers (?)—do not take less [than As. 4]. If an infidel sells his land to a Muhammadan, collect the revenue from the latter, because in truth it was not the latter's possession].

Fifteenth.—If any man turns his land into a cemetery [123,b]

or serāi in endowment (waqf), regard its revenue as remitted.

[Commentary, 124, a:—As it is a pious act to endow tombs and serāis, therefore the Emperor forbids the collection of revenue from them, for the sake of benefiting and doing good [to the public].

Revenue ought not to be taken [from such lands].

Sixteenth.—About revenue by division of crops (kharāj-i-muqāsema): If a man, whether Hindu or Muhammadan, is not the owner of a revenue-paying land, but has only bought it or holds it in pawn, he ought to enjoy the profit from whatever is produced in it. Collect from him the proper portion which has been fixed [as revenue],—provided that the share is neither more than one-half nor less than one-third [of the total crop]. If it be less than one-third, increase it, [if more than one-half, decrease it], as you consider advisable.

[Commentary:—If a man is not the real owner of a muqāsema land, but holds it [by purchase or] in pawn, he ought to enjoy the gain from the land, whether he be Hindu or Muhammadan, on condition that in case of mortgage he has received permission [to till] from the mortgager. Therefore, collect from him the portion [previously] fixed as the assessment on that land. But this portion ought not to be more than one-half nor less than one-third. If more than one-half, decrease it, if less than one-third, increase it, to a proper amount.]

Seventeenth.—If the owner of a muqāsema land dies without leaving any heir, act, in giving it in lease, direct cultivation, etc. according to the ordinances issued [above] for muazzaf lands.

[Commentary:—If the cultivator dies without heir, the man who administers the land should act in the manner prescribed in the third clause about kharāj-i-muazzaf, in giving it in lease or direct cultivation.]

Eighteenth.—In muqūsema lands, if any calamity overtakes the crop, remit the revenue to the amount of the injury. And if the calamity happens after reaping the grain or before reaping,

gather revenue on the portion that remains safe.

[Commentary:—The Emperor seeks the happiness of the ryots. Therefore he strongly orders that no revenue should be demanded for the portion destroyed. But it should be collected for the remnant according to the share of that remnant.]

Farmān of the Emperor Aurangzib-'Ālamgir to Rasik Dās krori in the form of a revenue-guide.

[267, a.] Rasik Dās, thrifty and obedient to Islam, hope for Imperial favours and know—

That, all the desires and aims of the Emperor are directed to

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the increase of cultivation, and the welfare of the peasantry and the people at large, who are the marvellous creation of and a trust

from the Creator (glorified be His name!).

Now the agents of the Imperial court have reported, after inquiry among the officers of the parganas of Crown lands and fiefs (taiul) of jagir-holders, that at the beginning of the current year the āmins of the parganas of the Imperial dominions ascertain the revenue of many of the mauz'as and parganas from a consideration of the produce  $(h\bar{a}sil)$  of the past year and the year preceding it, the area capable of cultivation, the condition and capability of the ryots, and other points. And if the ryots of any village do not agree to this procedure, they fix the revenue at the time of harvesting by [actual] survey or estimated valuation of crop.1 And in some of the villages, where the cultivators are known to be poor and deficient in capital, they follow the practice of division of crops  $[\underline{ghalla-ba\underline{khsh}i}]$  at the rate of  $\frac{1}{2}, \frac{1}{2}, \frac{2}{5}$ , or more or less. And at the end of the year they send to the Imperial record office the accountbooks  $(tum\bar{a}r)^2$  of the cash collection of revenue, according to rule and custom, with their own verification (tasdig), and the Kroris' acceptance, [267, b] and the signatures of the chaudhuris and qānungoes. But they do not send there the records of the lands of every pargana with description of the cultivation and details of the articles forming the autumn and spring harvests,—in such a way as to show what proportion of the crop of last year was actually realised and what proportion fell short, what difference, either increase or decrease, has occurred between the last year and the present, and the number of ryots of every mauz'a, distinguishing the lessees, cultivators, and others. [Such papers] would truly exhibit the circumstances of every mahal, and the work of the officers there—who, on the occurrence of a decrease in the collection of the mahal, after the ascertaining of the revenue had taken place, remit a large amount from the total [standard] revenue on the plea of deficient rainfall, the calamity of chillnip, dearth of grain, or something else.

If they act economically [or with attention to minute details] after inquiring into the true state of the crops and cultivators of every village, and exert themselves to bring all the arable lands under tillage and to increase the cultivation and the total standard revenue, so that the parganas may become cultivated and inhabited, the people prosperous, and the revenue increased, then, if any calamity does happen, the abundance of cultivation will prevent

any great loss of revenue occurring.

## THE EMPEROR ORDERS THAT-

You should inquire into the real circumstances of every village in the parganas under your diwāns and āmins, namely,

<sup>1</sup> Kankoot—"Estimate of the ripened corn is called Koot." (Brit. Ind., p. 216.)
2 Tumār—rent-roll.

what is the extent of the arable land in it? [268, a] what proportion of this total is actually under cultivation, and what portion not? What is the amount of the full crop every year? What is

the cause of those lands lying uncultivated?

Also find out, what was the system of revenue collection in the reign of Akbar under the diwāni administration of Tudar Mal? Is the amount of the sāir cess the same as under the old regulations, or was it increased at His Majesty's accession? How many maux'as are cultivated and how many desolate? What is the cause of the desolation? After inquiring into all these matters, exert yourself to bring all arable lands under tillage, by giving correct agreements (qaul) 1 and proper promises, and to increase the first rate crops. Where there are disused wells, try to repair them, and also to dig new ones. And assess their revenue in such a way that the ryots at large may get their dues and the Government revenue may be collected at the right time and no ryot may be oppressed.

And every year after correctly preparing the papers containing the number of the cultivators of every mauz'a, [the extent of] the cultivated and uncultivated lands, lands irrigated by wells and by rain [respectively], the higher and lower crops, the preparations for cultivating the arable land for increasing the first-rate crops and bringing under culture the villages which had lain desolate for years,—and what else has been ordered in previous revenue-guides (dasturu-l-'aml),—report these details, with the amount of the money collected during the year just completed [268, b]. Know this regulation and procedure as established from the beginning of the autumn of the year of the Hare, the 8th year of the reign, and act in this way, and also urge the

officers of the mahals of the jāgir-dārs to act similarly:—

First.—Do not grant private interviews to the 'amils and chaudhuris, but make them attend in the [public] audience-hall. Make yourself personally familiar with the ryots and poor men, who may come to you to state their condition, by admitting them to public and private audiences, so that they may not need the intermediation of others in making their requirements known to

you.

Second.—Order the 'amils that (i) at the beginning of the year they should inquire, village by village, into the number of cultivators and ploughs, and the extent of the area [under tillage]. (ii) If the ryots are in their places, the 'amils should try to make every one of them exert himself, according to his condition, to increase the sowing and to exceed last year's cultivation; and advancing from inferior to superior cereals they should, to the best of their power, leave no arable land waste. (iii) If any of the peasants runs away, they should ascertain the cause and work

<sup>&</sup>lt;sup>1</sup> Tippu Sultan's order: "On the commencement of the year [the amil] shall give cowle to all the ryots...and encourage them to cultivate the lands." British India Analysed, I, 1 and 2.

<sup>2</sup> A Turkish year.

very hard to induce him to return to his former place. (iv) Similarly, use conciliation and reassurances in gathering together cultivators from all sides with praiseworthy diligence. (v) Devise the means by which barren (banjar) lands may be brought under cultivation.

Third.—Urge the  $\bar{a}mins$  of the parganas, that at the beginning of the year, after inquiring into the agricultural assets (maujudāti-i-mazruʻaāt) [269, a] of every tenant, village by village, they should carefully settle the revenue in such a way as to benefit the Government and give ease to the ryots. And send the  $daul^{-1}$  of

revenue to the Imperial record office without delay.

Fourth.—After settling the revenue, order that the collection of revenue should be begun and the payment demanded at the appointed time, according to the mode agreed upon in every pargana for the payment of the instalments of revenue. And you yourself should every week call for reports and urge them not to let any portion of the fixed instalments fall into arrears. If by chance a part of the first instalment remains unrealised, collect it at the time of the second instalment. Leave absolutely no arrears at the third instalment.

Fifth.—Having divided the outstanding arrears into suitable instalments according to the condition and capability of the ryots, urge the kroris to collect the instalments as promised [by the ryots], and you should keep yourself informed about the arrangements for collecting them, so that the collection may not fall into

abeyance through the fraud or negligence of the 'amils.

Sixth.—When you yourself go to a village, for learning the true condition of the parganas, view the state and appearance of the crops, the capability of the ryots, and the amount of the revenue. If in apportioning [the total revenue among the villagers] justice and correctness have been observed to every individual, fair and good. But if the chaudhuri or muqaddam or patwāri has practised oppression, conciliate the ryots [269, b] and give them their dues. Recover the unlawfully appropriated lands (gunjāish) from the hands of usurpers. In short, after engaging with honesty and minute attention in ascertaining [the state of things] in the present year and the division (? or details) of the assets, write [to the Emperor] in detail,—so that the true services of the āmins and the admirable administration of this wazir [Rasik Dās] may become known [to His Majesty].

Seventh.—Respect the rent-free tenures,  $n\bar{a}nk\bar{a}r^2$  and  $in'\bar{a}m$ , according to the practice of the department for the administration of Crown lands. Learn what the Government 'amils have increased (?), namely, how much of the tankha of jagirs they have left in arrears from the beginning, what portion they have deducted

<sup>1</sup> Daul—"an account of particular agreements with the inferior farmers of the district, attested by the Canongoes; sub rent-roll." (Brit. Ind., p. 222.)

2 Nankar—(Brit. Ind., p. 148). Enams—"the meanest and more general gifts of land, bestowed on mendicants and common singers." (Brit. Ind., p. 186.)

on the plea of shortage [of rain] and [natural] calamity. In consideration of these things resume [the unlawfully increased rent-free lands] of the past, and prohibit [them] in future, so that they may bring the parganas back to their proper condition. The truth will be reported to the Emperor, and favours will be shown

to all according to their devotion.

Eight.—In the cashier's office (fotakhāna) order the fotadārs to accept only 'Ālamgiri coins. But if these be not available, they should take the Shah Jahani Rupees current in the bazar, and collect only the sikka-i-ābwāb. Do not admit into the fotakhāna any coin of short weight which will not pass in the bazar. But when it is found that the collection would be delayed if defective coins are returned, take from the ryots the exact and true discount for changing them into current coins, and immediately so

change them.

Ninth.—If, (God forbid!) any calamity [270, a] from earth or sky overtakes a mahal, strongly urge the āmins and 'amils to watch the standing crops with great care and fidelity; and after inquiring into the sown fields, they should carefully ascertain [the loss] according to the comparative state of the present and past produce (hast-o-bud). You should never admit [as valid] any sarbasta 2 calamity, the discrimination (tafriq) of which depends solely on the reports of the chaudhuris, qanungoes, muquaddams, and patwāris. So that all the ryots may attain to their rights and may be saved from misfortune and loss, and usurpers may not usurp [others' rights].

Tenth.—Strongly urge the āmins, 'amils, chaudhuris, qānungoes, and mutasaddis, to abolish balia (? or hālia?), exactions (ākhrājāt) in excess of revenue, and forbidden ābwābs 3 (cesses),—which impair the welfare of the ryots. Take securities from them that they should never exact balia or collect the ābwābs prohibited and abolished by His Majesty. And you yourself should constantly get information, and if you find anyone doing so and not heeding your prohibition and threat, report the fact to the Emperor, that he may be dismissed from service and another ap-

pointed in his place.

Eleventh. For translating Hindi papers into Persian, inquire into the rateable assessment and apportionment  $(b\bar{a}chh-o-bihri)^4$  of the revenue, exactions  $(\bar{a}khr\bar{a}j\bar{a}t)$ , and customary perquisites

<sup>3</sup> Abvabs—"Imposts levied under the general head of Sair" (Brit. Ind., p. 168); they are enumerated in pp. 164-166. "Aurangzeb abolished 70 of these abvabs" (p. 168).

4 Bachh—Distribution of an aggregate sum among a number of individuals (Wilson, p. 42, b.). Behri—Proportionate rate (Wilson, p. 70, b.).

<sup>1</sup> Hastabood jama—" Comparative account of the former and actual sources of revenue, showing the total increased valuation of the lands, the variations produced by casualties, new appropriations, &c." (p. 220).

exemption from payment. Hence the word in the text means entitled to remission of revenue. Sarbasta in the sense of secret does not yield so good a sense.

(rasumāt) name by name. As for whatever is found to have been taken from the peasants on any account whatever, after taking account of the payments (wāsilāt) into the fotakhāna, the balance should be written as appropriated by the āmin, 'amil, zemindārs and others, name by name. And, as far as possible [270, b.] collect and translate the rough records (kāghaz-i-khām) of all the villages of the pargana. If owing to the absence of the patwari or any other cause, the papers of certain mauz'as cannot be got, estimate this portion from the total produce of the villages [taken collectively], and enter it in the tumār. After the tumār has been drawn up, if it has been written according to the established system, the diwān ought to keep it. He should demand the refunding of that portion of the total gains of 'amils, chaudhuries, qānungoes, muqaddams, and patwāris, which they have taken in excess of their established perquisites (rasum-i-muqarrar).

Twelfth.—Report the names of those among the āmins and kroris of the jāgirdārs, who have served with uprightness and devotion, and by following the established rules in every matter have proved themselves good officers,—so that as the result they may be rewarded according to their attention to the gain of the State and their honesty. But if any have acted in the opposite manner, report the fact to the Emperor, that they may be dismissed from the service, put on their defence and explanation [of their conduct], and receive the punishment of their irregular acts.

Thirteenth.—With great insistence gather together the papers of the records (sar-i-rishta) at the right time. In the mahal in which you stay, every day secure from the officers the daily account of the collection of revenue and cess and prices-current, and from the other parganus the daily account of the collection of revenue and cash (maujudāt) every fortnight, and the balance [271, a] in the treasuries of fotudārs and the jam'a wāsil bāqi every month, and the tumār of the total revenue and the jam'a bandis and the incomes and expenditures of the treasuries of the fotadārs season by season. After looking through these papers demand the refunding of whatever has been spent above the amount allowed (? or spent without being accounted for), and then send them to the Imperial record office. Do not leave the papers of the spring harvest uncollected up to the autumn harvest.

[271, b.] Fourteenth.—When an āmin or 'amil or fotadār is dismissed from service, promptly demand his papers from him and bring him to a reckoning. According to the rules of the duwān's department, enter as liable to recovery the ābwābs that ought to be resumed as the result of this auditing. Send the papers with the records of the ābwābs recovered from dismissed 'amils, to the Imperial cutchery, in order that the auditing of the man's papers may be finished.

Fifteenth.—Draw up the diwāni papers according to the established rules season by season, affix to them your seal [in proof]

of verification, and send them to the Imperial record office.

<sup>1</sup> Russooms—"Customs or commission." (Brit. Ind., p. 149.)
2 Jamabandi—"Annual settlement of the revenue." (Brit. Ind., p. 174.)

## [112, 6.] نقل فرمان حضرت محيالدين محمد اورنگ زيب عالمگير بادشاه غازي في سند ١٠٧٩ هزار و هفتاد و نه هجري در باب گرفتن خراج

كتابت شعار معهد هاشم بعنابت بادشاهي اميدوار بودة بدانه كه چون بيها من توفيقات و تأثيدات رب الارض و السّموات - عظمت الاعولا و عمّ نعالاً - هموارة عنان عزيمت والا همت بموجب آية كويمة ان الله يامر بالعدل و الاحسان معطوف است و همّت عالي نهمت به تمشيت امور و تنسيق مهام بر وفق شريعت الله و است الله العمولة والسلام - مصووف و بيوسة مصدوقة بالعدل قامت السموات و الارض منظور نظر از عبادات و تعظيم امر پروردگار و شفقت و مرحمت بر كبار و صغار بيش نهاد خاطر باهر الانوار است - بنابرين درين [ ايام ] خجسته فرجام فرمان عالي شأن عدالت عنوان شرف نفاذ يافت كه متصديان مهمات حال و استقبال و عمال ممالك محروسة هندوستان از كران تاكوان خراج وغيرة معال آن باندازة و طريقة - كه الخوانية از روايات صحيحة معتمده مستفاه ميگرديد و منظور است - بع تحصيل رساند - و هر سال يرليغ مجده بطلبند و و تخلف و تجاوز را موجب تحصيل رساند - و هر سال يرليغ مجده بطلبند و و تخلف و تجاوز را موجب نكال [ 113, 5, 1] اخرت و دنيا شهارنه \*

آول باید که با رعایا مراتب رفق مرعی دارند - و تفقد احوال آنها نهایند - و به حسن تدبیر و حکمت عملی سعی کنند - که بطیب کفس و خوشدلی در تکثیر زراعت کوشش نهایند که هرچه قابل زراعت شود مزروع سازند \*

دوم از ابقدائی سال بو احوال هر یک از ارباب زراعت بحسب مقدور اطلاع حاصل کنند - که دربی زراعت اند یا دست ازان کشیده اند ؟ - و اگر قدرت بر رراعت دارند بترغیب و دلاسا پیش آیند \* و اگر از بعضے اصور رعایت خواهند

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رعایت نمایند . اگر بعد تفحص ظاهر شود که با وجود قدرت زراعت و آب باری دست از زراعت باز داشته اند . باید که آنها را تاکید و تهدید نمایند و بزچر و ضرب پیش آیند \* و در خراج موظف بارباب زمین معلوم نمایند [115, a.] که خراج از انها گرفته خواهد شد زراعت میکنند یا نه و اگر معلوم کنند که ارباب زراعت در تهیی اسباب زراعت درمانده اند - زری بطریق تقاوی از سرکار دهند و ضامن بگیرند \*

سيوم در خراج موظف - اگر ارباب زمين از تهيهٔ اسباب زراعت عاجز و درمانده باشند - يا زمين را معطل گذاشته گريخته بروند - آنزمين را بقصد اجاره يا ه زراعت بديگري بدهند - و قدر خراج از اجاره [گير] در صورت اجاره و از حصّهٔ مالك در صورت مزارعت سقانند و تتمه اگر بهاند بهالكش رساند \* يا شخص را قايم مقام مالك سازند - تا زراعت نموده خراج را ادا نمايد و تتمه را خود متصرف شود \* و هرگاه ارباب زمين قدرت زراعت بهم رساند زمين آنها واپس بدهند \* اگر زمين را [. آ. [. آ. [ ] شخصي معطل گذاشنه گريخته باشد باجاره ندهند - بعد منقضي آن سال در سال ديگر باجاره دهند \*

چهارم بر قطعات زمین افتاده که بر زراعت باز نمي آید مطلع شوند \*
اگر از جملهٔ شوارع و طرق است داخل بنائ شهر و قرید نمایند - که کسی
از امر روع نسازد \* و اگر غیر آن زمین مالحظه نمایند و اگر درآن مابقی و زراعت بود - [ که ] ممتنع الفالح باشد - بعلت خراج آنزمین مزاحم نشوند \*
و اگر در آن مابقی ممکن الفالح بود یا در اصل بایر بود - بر هر دو تقدیر اگر و نمین مملوکست و مالکش حاضر و قادر بر زراعت باشد - مالك را تاکید کنند که مزروع سازد \* و اگر آنزمین مملوک نیست یا مالکش مجهولست آنرا بکسے که قادر بر احیا باشد بدهند تا احیا نماید \* پس اگر اجازه گیر مسلمان باشد وزمین محذکور [. م 117] قریب اراضی عشری بود - بر او عشر مقرر نماین \* و اگر قریب اراضی عشری بود - بر او عشر مقرر نماین \* و در صورتی که خراج نماید بنابر تقاضای وقت چیزی بر بیگه بالمقطع - که انوا گراج مقطعت گویند - وضع کنند - یا حصهٔ معین از محصول نصف که انوا خراج مقطعت گویند - وضع کنند - یا حصهٔ معین از محصول نصف که انوا خراج مقطعت گویند - وضع کنند - یا حصهٔ معین از

بود لاكن بغايت عاجز از زراعت باشد - اگر دران زمين قبل ازين خراج مقاسمة باشد موافق حكمي كه مي آيد بعمل آورند \* و اگر غير خراج مقاسمة باشد يا زراعت فشود بعلت عشریا خراج مزاحم نشوند الاکن در صورت عجز تقاوی داده بر وراعت مشغول سازند \*

پنجم قطعة زمين كه باديه [ باشد ] اگر مالكش معلوم باشد باو وا گذارند دیگرے را دران [117, 6.] دیل ندھند \* اگر مالک کن معلوم نباشد و احتمال مودات دران زمین نبود - به مقتضای مصاحب هرکوا لایق پرداخت آنزمین واننه باو بدهنه و هرکه آنوا صالح زراعت کند او را مالك رقبهٔ آنزمین دانده - و از او واپس نسدانند \* و اگر عودات اجناس دران زمین باشد از امرے که مانع عودات دران زمین بود مانع آیند . و در انتفاع آنزمین مزارعت وغيرها منع نمايند ـ وهيچ كس را دست تصرف دران ندهند و مالك ندانند \* اگر قطعم زمین بادیه دربست از c سَبع انققال است و خلاف عیر ان از سبيم ديگر افتاه - تازمان كه پيش ازين تعلق اوست متعلق او دانند و دیگری را دخل ندهند \*

شَشَم درجائ كه بر مزروعات عشريا خراج مقرر نباشد . آنچه موافق شرع مقرر باید نمود نمایند \* و در صورت خراج آنقدر وضع کنند که [119, ه.] از گرفتن ه آن رعایا از پا نیفتند . و هیچ وجه از نصف بر نگذارند هرچند توانای آن زیاده باشد ، و در جای که مقرر باشد همان مقرری بگیرند ـ بشرطی که در صورت حُراج زيادة از نصف نباشد كه از گرفتن [ آن ] رعايا از پا نيفتند \* او الأخراج سابق را كم كردة هرچه موافق طاقت دانند مقرر نماينه - اكر دران گنجایش زیاده از مقرری باشد زیاده بگیرند .

هَفتم تبديل عراج موظف بمقاسمه و مقاسمه بموظف اگر رعايا بآن رضامند باشد بكنند و الا نكنند \*

هُشَتَم وقت طلب خواج موظف رسيدن هر جنس عله بحد دروست \* يس هر جنس كه بعد درو برسد حصّة خراج كه برابر آن جنس بود بكيرند . نهم در خراج موظف [ اگر در ] بعض زراعت آفت غير معكنة ، الا حذار

به كية الأضرار Text) از زمين كن Text (d) Text (c) Text -we

سالم برعايا برسد \*

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وعدم در خواج موظف هر که زمین خود را باجود قدرت بر زراعت و عدم مانع معطل دارد - خواج در بعضی [ زمین ] دیگر بگیرند \* و در بعضی ده بآب در آید و یا آب باران منقطع شود [یا] با زراعت پیش از بریدن آفت غیر ۱۸ ممکن الاحذار بعدے برسد که جنس غله بدستش نیامد - و دران سال آنقدر مدّت نماندلا که پیش از آمدن سال دیگر مرتبهٔ ثانیه زراعت کند - خراج ساقط دانند \* و اگر بعد از بریدن آفت برسد - خوالا ممکن ۱۸ الاحذار مثل خوردن دواب وغیره یا [ بعد ] ازان مدت مذکوره مانده است - خواج بسانند \*

یازدهم اگر مالک زمین خراج موظف از زمین خود زراعت نموده پیش از ادادی خراج آنسال فوت شود و معصول زراعت بدست ورثهٔ متوفیء مذکور کید [121, a.] خراج آن از ورثه بگیرند \* و اگر متوفیع مذکور پیش از انکه راعت کند فوت شده و درانسال آنقدر [ مدی ] بدست نمانده باشد هیچ نستانند \*

دو ازدهم در [خراج] موظف - اگر مالک زمین خود را باجاره یا عاریه دهد [و] مستاجر و مستعیر دران زراعت کند - وظفیهٔ آن از مالک زمین بگیرند \* و اگر آنها باغ نمایند خراج از مستاجر و مستعیر بگیرند \* اگر زمین خراجی را کسے قبض نموده منکر باشد [و] مالک گراهان نه داشته باشد - اگر غاصب زراعت کرده باشد خراج از غاصب بگیرند و اگر زراعت نکرده باشد از هیچ یکے نستانند \* و اگر غاصب مقر نباشد و مالک گراهان نداشته باشد خراج از مالک ستانند ، و در صورت رهی مرافق حکم غصب بعمل کرند \* و اگر مرتهن بی اذن راهن دران زراعت کرده [ . 6 . [ 121 ] باشد [ خراج از مرتهن بگیرند ] \*

سيزدهم در خراج موظف - اگر شخص ز زمين خراجي خود را كه

مقدار از افت Text (f)

بهكية الأضرار Text (h)

باب بارات Text (و)

<sup>(</sup>i) Text dimini

ز زمین Text (j)

دران زراعت میشود درمیان سال بفروشد - اگر یک فصله است و مشتری آنوا قدف نمونه از بقیه سال مدتے در یافته است آکه آ تواند دران سال زراعت کرد - کسے مانع زراعت نیست - خراج آن از مشتری و الا از بایع ستانند \* و اگر دو فصله است آ و ] یک فصل را بایع دریافته و یک را مشتری - خراج مقرری بر هر دو قسمت نمایند \* و اگر دران زمین زراعت باشد که بعد درورسیده - خراج آن از بایع ستانند \*

پانزدهم اگر کسے زمین خود را مقدری [6، 123] یا سرای وقفی نموی - خواج آن ساقط دانند \*

شآنزدهم به در خراج مقاسمه - هر که زمین خراجی را مالک نبود - اگر کافر باشد یا مسلم یا خریده باشد یا گرو باشد - به کفایت هر چه دران زمین پیدا شود بر او باشد - حصه تعلق که مقرر باشد [از او] بگیرند - بشرطی که زیاده از نصف نباشد و الا نه کم از ثالث - و اگر کم از ثالث باشد زیاده نمایند هرچه مناسب دانند \*

از خراج Text یافته است اگر تواند دران سال الغ Text (۱۵)

کفایت برو باشد باذن هرچه دران زمین پیدا شود حصد تعلق Text (ش) کفایت برو باشد باذن

ه معدهم اگر مالک زمین مقاسمه میود و وارث نگذارد - دران زمین بدادن آن باجاره یا بهزارعت وغیره چنانچه بموظف گذشت بعمل آرند \*

و مردهم در مقاسمه - اگر زراعت را آفت رسد هر قدر که ضایع شود خراج
 آن نگیرفد - و اگر بعد از بویدن غله آفت برسد یا پیش از بریدن عر قدر که
 بهاند خراج بگیرند \*

هجدهم Text هجدهم

Commentary on the farman to Muhammad Hāshim.

[113, 6. margin] مضمون صدر صوف تمهيد مقدمه [و] تهديد از جناب كبريا براے اجراے امر سلطاني وجهت عدل بعمال وشفقت و مرحمت و رفاهيت رعايا در تحصيل خراج وغيرة مطابق شرع شويف \*

در دفعه اولی انجه مددرج است اراده سلطان عادل اینست - که صراتب رفق و حسن تدبیر که باعث تکثیر م زراعتست عمل نمایند \* و آن اینست که بهیج نوع اسم و رسم از قرار ق بسته و نوخ دامی و درمی زیاده نگیرند \* و از نوعی بعنوان از م احدے بر رمایا ظلم وتعدی نشود - و باید [که] اهتمام کار انجا محافظ و معدل این امور باشد \*

[114, a.] دفعه دوم دلیلست بربن که مزارعان صوف براے همین مامورند که زراعت کردلا مالواجب سرکار اور نمایند و حق زراعت خود را بگیرند و واگر از اسباب زراعت درماندلا باشد تقاوی - که از سرکار حاکم می یابند - نظر برین است که چون حاکم مالکست باید - که کاسب زمین خود را هرگالا مقدور نداشته باشد اسباب کسب بدهد - و نیز ارادهٔ سلطانی ارادهٔ له اولست \* و تهدید و ضرب و زجر نظر برین است که هرگالا حاکم مالک است - در هر صورت رعایت و عدل منظور داشته باشد - پس ضرور است که مزارع هم با آئین خود بتکثیر زراعت کوشش وجهد بلیغ نمایند که آثار آباد ے هر روز بیشتر از پیشتر رو دهد \* این معنی باعث کفایت سرکار و رفاهیت رعایا است \*

دادن دادن دادن دادن دوم میوم سدوم سدوم باز و گرفتن خراج دادن دادن دادن دادن دودن دوران نمودن و قدرت خراج آن از اجارا [گیر] و از حصه

در واب رعايا گرفتن Text (e)

<sup>(</sup>a) Text عبد (ع) (زراعت عبل Text عبد (a) Text عبد (b) Text عبد (d) Text عبد (d) Text اولیت

مالک درمزارمت و نیمه بمالک یعنے بمزارع سابق زمین f رسانده [مندرجست] -لفظ مالک که درینجا مندر است بآن معنے نیست که این زمین ملک اوست - بلکه مالک باینمعنے که مالک مزارعت در آن زمین است - چرا که اگر مالک بمعنی صاحب ملک باشد از عجز و درماندگی اسباب زراعت نخواهد گریخت ـ بلکه ملک خود را فروخته خود را بدو صورت نجات می تواند داد - یک اینکه مالواجب سركار ذمة مشتري ميشود - دوم وجة قيمت ملك خود براے رفع مايحام بكار تواند آورد \* و اين كه مندرج است شخص را قايم مقام مالك سازند -در اصل قايم مقام مالك سيوات وارث او نميشود- و اينمعني مخصوص ملكيت است السي دريدجا كه قايم مقام مندرجست بهدان معني است كه قايم مقام [مالک] مزارعت ، مگر بشق دیگر کسے که زمین غیر حاصل بایر را باذن حاکم بصرف زر مملوک خود ابادان سازد و خواج سلطاني بوان و مقور داده بسرکار ميرسانيده باشد - ان شخص حق خدمت رعايا برزمين مزروع خود دارد -چرا که باعث احیائ زمین اوست - و اصل مالك همانست كه قایم مقام مالك ميسازد يعني حاكم \* مثلى است مشهور م هر كه شمشير زند سكّه بنامش خوانند \* و این که مندرج است که نیمه بهالکش رسانند و بعد ازان تا یکسال بدیگرے اجارة ندهذه - نظر بوين كه در خراج موظف قيد حاصل وغير حاصل نيست - در هر صورت باید مزارع دراج نقد ادا ماید \* بنابر حاکم را رعایت و عدل منظور است كه تا سال رعايتاً انقظار او نمايند . و در صورت مزارعت و اجاره از خواج سلطانی له هرچه زیاده بشود باو بدهده \*

[116, a.] چهارم — نسخهٔ زمین او چهاله شواه و در اصل بایر و مجهول الملک و مالکش بغایت عاجز از زراعت وغیره مراتب بهر تقدیر بعنی مالک همان معنی اولمت \* و نیز احتمال مملوک بسق دیگر میتواند شد - چنانچه در صدر مذکور یافت - و در مالك بودن حاکم دلایل بسیار اظهر من الشمس و ایتن من الامس است - نظر بو طول کلام منضبط نشد \*

[.6, 8.] آنچه در دفعه پنجم درباب زمین بادیه که مالکش موجود باشد باو حواله نمایند - والا موجب مصلحت کسی که لایق باشد باو بدهند که صالح زراعت کند او را مالک رقبه دانند - و از او باز نستانند - اگر در او احتمال عودات نیاشد

تقرر g) Text رسانیدن (g) Text تقرر علمانینیه بشود (h) Text)

يا ديگر مراتبات وغيرة مندرج است \* لفظ عودات درينجا دو معني دارد - يكي در زمین که احتمال کان باشد - دوم عود یعنے باز آمدن آن شخص بران زمین \* وشق دیگر که در صدر مندرج شدی است - درین دفعه ظاهر و عیان است \* هر که زمین را صالی زراعت کند مالک رقبه او را دانند - همان معنے است که زمین باير لا حاصل را باذن حاكم كباد كردة كفايت سركار نمودة است - البته حق خدمت با اوست - بذابر [آن] حكم سلطاني باين اجرا يافته - هر كه زمين را صالح زراعت کند مالک رقبه دانند و از او واپس نستانند \* پس ظاهر است هر كه برخلاف اين خواهد بود - او را دران زمين حق نخواهد بود - و در انتفاع آن زمین مزارعت وغیره که مندرجست ـ یعنے شخص دیگر را که بعد ازین ادعاي ملكيت پيدا كنه - او را در انتفاع آن زمين - كه از وجه مزارعت باشد يا سيوامي آن مثل باغ يا قالاب وغيرة - قصرف ندهند و مالك ندانند - زيرا كه این زمین از معصول افقاده بود - درین صورت معی آن معق است -ديگرے راحق نخواهد بود \* و اگر قطعه زمين باديه وغيرة كه مندرجست -پس قطعه زمین بادیه بتمامیه منتقل گردد بشخص دیگر - و از عدم بودن مالک آن یا حقیقت احیا [از] افتادگی زمین و عدم حصول محصول سبب این شخص ـ پس تا زمان که آنزمین انتقالی از حاصل نافداد اود - بشخصی كه اول تعلق داشت و از انتقال او باين شخص منتقل گرديده . وجه محصول الرا متعلق بهمان شخص بدانند - از منتقل اليه علاقه نيست - چه از زمال كه بجانب اين انتقال نموده متعلق اينخواهد بود \*

[18, a.] جواب در دفعه ششم - منظور سلطان [رعیت] پرور اینست - که خواج همانقدر بر رعایا مقور نمایند که رعایا بسبب مالگذاری از پا نیفتند - چر اکه زمین که مالک آن سلطان است آبادئی او از رعایاست - هرگاه رعایا برجا نباشند و از پا بیفتند یعنی بسبب زیاده طلب ی و ظلم عامل خراب شوند - آینده آبادی و صورت بهبود آبادئی زراعت چه قسم میتواند بود ؟ لهذا درین دفعه تاکیداست \* و این که در فقرهٔ اخر مندرجست - که اگر دران گنجایش از مقرری زیاده باشد زیاده باین فقرهٔ اولی در همین دفعه است - شاید سهوء کاتب بوده باشد - چنان بدریافت که این فقره بنابر تاکید است می باید که بگیرند باشد \* زیرا که در اول معنی مطلق میکند - هر چند توانایی زیاده باید ناهد ناده از نصف زیاده در ناهد ناهداند باشد به باز درینجا حکم میکند زیاده از مقررے نگیرند

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این معنے أز تقویت حكم اولاست - بلكة میتواند شد كه تكرار حكم بنابر تاكید بليغ است \*

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جواب در دفعه هفتم — حكم تبديل خواج از يكديگر در صورت رضامندين وعاياست بنابر رفاهيت آنها \*

جواب در دفعه هشتم — حكم [گرفتن] خراج در وقت رسيدن غله بكت درو - مراد اين است كه هرگالا خراج در وقت درو طلب خواهد شد رعايا بالا قصديع بقدر مالواجب سوكار زراعت را بفروش رسانيده ادائے خواج سلطان خواهد نحود \* و اگر پيش ازين طلب شود باعث تصديع و ضيق رعاياست ، بنابو مطلب سلطان بررفاهيت آنها \*

[.18, 6.] جواب در دفعه نهم - یعنے اگر در زمین خواج موظف مقرر باشت و در بعضے زراعت آن زمین آفت برسد که بالکل تبالا نگردد - پس مي بايد که آنوا تحقیق نموده بقدرے که تبالا شدلا باشد مجرا دهند - و قدرے [که] باقي ماندلا است آنقدر محصول از آن بگیرند که براے رعیت نصف سالم بعاند مثلاً در یک بیگهه زمین دلا من جنس پیدا میشد - بسبب افت شش من باقي ماند - و نصف سالم این پنج منست - مي باید که یکمن بگیرند که نصف سالم آن این پنج من بروعیت باقی باشد \*

جوآب در دفعه دهم سد یعنی اگر شخصی زمین دارد که خواج موظف دران مقور است و او قادر بر زراعت است و هیچ مانع بوای زراعت نیست - معطل دارد - پس خراج آنزمین را در زراعت دیگر که از آن شخص باشد بگیرند - زیرا که با وصف بودن قذرت و عدم مانع معطل داشته است \* و اگر در بعض زراعت بسته آنشخص سیلابی رسیده باشد یا آب باران - که بولی رسیدن جنس زراعت بسته بود - تمام شده باشد - و زراعت ضایع شده باشد - یا درمیان بعض زراعت آن شخص بیش از آن که بحد پختگی رسد و بریده گردد چندان آفت غیر میکن شخص بیش از آن که بحد پختگی رسد و بریده گردد چندان آفت غیر میکن مدی آنسال نمانده باشد - خواج نگیرند \* و اگر در همان بعض زراعت آن شخص مدی آنسال نمانده باشد - خواج نگیرند \* و اگر در همان بعض زراعت آن شخص محص آفت میکن الاحذار بعد بریدن محصول رسد - یا این که پیش از بریدن محصول آنت رسیده باشد ایکن امکان زراعت آنانی در عرض مدی آنسال باشد -

تفریض Text (j)

<sup>(</sup>k) تصدیق (k)

<sup>(1)</sup> Text بررعیت verywhere. (m) Text الأضرار verywhere.

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محصول بگیرند \* زیرا که بعد از بریدن غله از عدم احتیاط انشخص آفت رسیده است - و همچنین اگر چه مه پیش از بریدن افت رسیده بود - اما ایام زراعت دیگر باقی بود - از سبب تغافل این شخص بعمل رسید - خراج گرفتن از اولازم آید \*

[.0, a.] جواب [درد معنى] يازدهم - آنجه از فوت مالك زمين و گرفتن خراج از ورثة او و نگرفتن خراج از ورثة [اگر] پيش از آن كه زراعت كند فوت كردة باشد - ظاهر است عدل صريح است \* چرا كه مالك زمين كه في الحقيقت مالك زراعت است پيش از آن كه زراعت كند فوت كردة باشد - از ورثة او بي اين كه از تركة او چيزي بانها برسد خراج گرفتن بعيد از عدل است و مالك زراعت كه مترفئ بودة باشد است و مالك زراعت كه مترفئ بودة باشد پيش از زراعت فوت كردة است و بدست و رئة او هيچ چيزي و جنس كه باعث خراجست نيامدة - كه از آنها خراج سناند \* لهذا لازم است كه هيچ نگيرند \*

الا معنى نمى شود - و در خراج موظف اگر مالک زمين خود را باجاره يا عاريه دهد الا معنى نمى شود - و در خراج موظف اگر مالک زمين خود را باجاره يا عاريه دهد و مستاجر و مستعير دران زراعت كند وظيفة كن از مالک زمين بگيرنه - و اگر كنها باغ نمايند خراج از مستاجر و مستعير بگيرند - زيباً كه مستاجر و مستعير در آن زمين باغ نموده اند - و اگر زمين خراجي را كسے قبض نموده مدكر باشد [و] مالک گواهان داشته باشد - اگر غاصب زراعت كرده باشد خواج از غاصب بگيرند - و اگر زراعت نكرده باشد خواج از عاصب مقو نباشد و مالک گواهان داشته باشد از هيچ يكي نستانند ، اگر غاصب مقو نباشد و مالک گواه نداشته باشد خواج از مالک ستانند \* يكظور معنى اينست \* و طور در اين كه - مالک گواهان مزارعت خود در آن دارد - خواج از مالک ستانند \* در صورت رهن موافق حكم غصب بعمل آزند - اگر موتهن بی اذن راهن دران زراعت كرده باشد - زيرا كه اگر موتهن باذن راهن زراعت كرده باشد - زيرا كه كردن زراعت نيز شامل رهن شد \* اگر بي اذن راهن زراعت كرد برو خراج لازم خواهد آمد - چرا كه صوف زمين در رهن راهن زراعت كرد برو خراج لازم خواهد آمد - چرا كه صوف زمين در رهن راهن زراعت كرد برو خراج لازم خواهد آمد - چرا كه صوف زمين در رهن راهن نراعت كرد برو خراج لازم خواهد آمد - چرا كه صوف زمين در رهن وست نه زراعت »

[122, a.] جواب [در دفعة] سيزدهم- هرگالا كسيبخواهد زمين خودرا يعني

مزارعت زمین خود را بفروشد - اگر درمیان سال مدت مشتری یافته است که زراعت در آنزمین تواند کرد - خرج از مشتری بگیرند \* و اگر دو فصل در زمین است یک را بایع و یک را مشتری در یافته است - خواج را دو قسمت کرده از طوفین بگیرند \* و اگر در آن زمین زراعت بود که بحد در رسیده است خراج از بایع ستانند - زیرا که زراعت که بحد درو رسیده است هرگاه بایع با وصف علم این فروخته است - البته قیمت زراعت رسیدن بحد درو گرفته است . لازم و آید که خراج از بایع ستانند \*

[122,6] جواب در دفعة چهاردهم - يعني اگر شخصي صال زمين باشد كه دران هراج موظف مقرراست وبران و زمين خانه بنا كند - يا درختهای به ميولا نشاند - در خراج آن تفاوت نكند - بدستور سابق وظيفه كه مقرر است بگيرند \* و اگر بر زميني كه زراعت ميكند [و] وظيفه زراعت از آن ميدهد - باغي سازد و درختها ئي ميولا دار بالا تفاوت نشاند كه محل زراعت نهاند - دو روپيه و دوازدلا آنه كه حاصل باغ مقرر است بگيرند - اگر چه هنوز آن درختها ميولا دراشته باشد ه مگر درختهائي انگور و بادام كه تا حالت بي ميوگي وظيفه گرفته شود و بعد [از] دادن ميولا حاصل باغ - لاكن اين حاصل باغ - كه دو روپيه و دوازدلا شد و باشد - بشرطي كه ربع يكه شرعي همگي معه حصه مالك تا پنجروپيه هشت آنه باشد - در صورت كه باين ربع نباشد - پس حاصل باغ موافق حصه نصف بگيرند \* و اگر قيمت محصول موافق حصه نصف كم از پاو روپيه باشد نصف بگيرند \* و اگر قيمت محصول موافق حصه نصف كم از پاو روپيه باشد كه بحساب غله در پنج سير شاهجهاني يك سير يافتند - ازين كهتر نكنند \* و اگر قيمت مسلمان خواج بگيرند - كافري زمين خود را بدست مسلمان فوه از آن مسلمان خواج بگيرند - كافري زمين خود را بدست مسلمان فوهشد از آن مسلمان خواج بگيرند - كافري زمين خود را بدست مسلمان فوهشد از آن مسلمان خواج بگيرند - كافري زمين خود را بدست مسلمان فوهشد از آن مسلمان خواج بگيرند - كافري زمين خود را بدست مسلمان فوهشد از آن مسلمان خواج بگيرند - كافري در اصل مالک او نبود \*

[.124, a] جواب در دفعه پانزدهم - جون مقبوه و سرا وقف نمودن امر احسن است لهذا سلطان نظر بر رفاهیت و افادهٔ حسنه امتناع گراج از او نمودند - الازم که خراج نگیرند \*

جواب در دفعه شانزدهم ... یعنی در خراج مقاسمه - شخصے که در اصل انزمین ازو نباشد یا گرو باشد . این شخص اگر کافر باشد یا مسلم - انتفاع آن ومین برای او خواهد بود - بشوطی که در رهن اذن از راهن داشته باشد ، پسی حصّهٔ متعلقهٔ آنزمین آنچه از پیشتر مقرر باشد از همان شخص بگیرند -

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لاكن مي بايد كه اين حصة زيادة از نصف و كم از ثلث نباشد \* در صورت زيادة از نصف كم - و در صورت كم از ثلث زيادة \* - بقدر مناسب نمايند \*

جواب در دفعه هعدهم — اگر مزارع بدیرد و وارث نگذارد - در آن زمین شخصے که اهتمام اوست بدادن إجاره و بعزارعت - بنوعی که بدفعهٔ سیوم بخراج موظف گذشت - بعمل آرند \*

جواب در دفعه هردهم - سلطان را منظور رفاهیت رعایا است - لهذا حکم قاکید است که هر قدر ضایع شود خراج نگیرند - هر قدر باقی بهاند موافق حصّه ههان بقید خراج ستانند \*

(r) Text ざいる

[267,a] نقل فرمان بادشاه اورنگؤیب عالمگیر بنام رشکداس کروری بطریق دستورالعدل \*

انكه كفايت شعار مطيع الاسلام رشكداس بمرحمت بادشاهانه اميدوار بودة بداند - از آنجا كه همگي هبت و الا وتمامئ نهمت فلک اعتلا بر ازدياد اباداني و استرفاهٔ حال كافهٔ رعايا و عامهٔ برايا - كه بدايع و دايع حضرت آفريدگار جل ذكرة اند - مصروفست - و درينولا بعد استفسار عمال پرگنات خالصه شريفه و تيول [جاگير] داران از كارپردازان پيشگاهٔ گلافت وجهانباني بموقف عرض اشرف واعلي رسيدة - كه احسال امناعي پرگنات ممالک محروسه جمع اكثري از مواضعات و پرگنات را در اعاز سال نظر بر حاصل سأل كامل و سال متصل و رقبهٔ قابل زراعت و حالت ف و استطاعت رعايا وديگر گصوصات داشته - مشخص مينمايند - و اگر رعيت بعضي از دهات باين عمل راضي نشود جمع آفرا هنگام رسيدن و اگر رعيت بعضي از دهات باين عمل راضي نشود جمع آفرا هنگام رسيدن مزروعات بعمل جريب ع يا كنكوت ميدهند - و در برخي از قريات كه مزروعان و كشاورزان انجا را پريشان حال و كم بضاعت ميدانند - عمل غله بخشي بقرار و كشاورزان انجا را پريشان حال و كم بضاعت ميدانند - عمل غله بخشي بقرار طوامير جمع نقد موافق ضابطه و معمول بتصديق خود [ و ] قبول [.6 , 762] كروريان و دستخط چودهريان و قانونگويان بدفةر خانه معلي ارسال مي دارند \*لاكن سر رشته راضي هر پرگنه از پرگنات ها قيد مزروعة و تفصيل اجناس خريف و ربيع سر رشته راضي هر پرگنه از پرگنات ها قيد مزروعة و تفصيل اجناس خريف و ربيع

و پرگنات . A. (a)

<sup>(</sup>b) A. omits

بدین نمط که در سال گذشته چه قدر جنس کامل بود و ناقص چنه ؟ و در سال حال نسبت بگذشته بزیادتی یا کمی چه تفاوت شده ؟ و تعداد مزارعان هر موضع بتفریق مستاجران و رعایا وغیره بدفتر خانهٔ معلی نمیرسد لا کیفیت هر محال و پرداخت متصدیان انجاه که پس از تشخیص جمع بر تقدیر وقوع کمی در حاصل آن محال - کمی باران یا آفت سرمازدگی یا ارزانی غله یا غیر آنوا دست آویز نموده - مبلغی از جمله جمع مجرا میدهند - از قرار واقعی ظاهر شود \* اگر آنها بحقیقت مزارعان و مزروعات هر قریه وا رسیده ازراهٔ جزورسی عمل نمایند و سعی در مزروع ساختن اراضی الایق زراعت و افزونی جزورسی عمل نمایند و سعی در مزروع ساختن اراضی الایق زراعت و افزونی خواهد شد و زیادتی در محصول پدید خواهد آمد و اگر درینصورت آفتی از آفات خواهد شد و زیادتی در محصول پدید خواهد آمد - واگر درینصورت آفتی از آفات رو دهد از راهٔ کثرت زراعت نقصان فاحش در حاصل راه نخواهد یافت \*

حکم جهان طاع علم مطیع شرف صدور می پیوندد که حقیقت هردید از دیهات پرگنات متعلق دیوانی و امینی خویش وا رسد که اراضی کی این زراعت درآن چه قدر است [.8, 26] و از انجمله مزروع و چه مقدار و نا مزروع چند ؟ - جنس کامل هر سال چه مقدار میشود ؟ و موجب مزروع نشدن اراضی مذکور چیست؟ و نیز در یابد که در زمان سعادت نشان حضرت عرش و اشیانی در عمل دیوانی و نیز در یابد که در زمان سعادت نشان حضرت عرش و اشیانی در عمل دیوانی واجه ترورمل دستور اخذ محصول چه بود ؟ و جره سایر موافق ضابطه قدیم است یا از سال جلوس مدارک زیاده بران قرار یافته ؟ و مواضع آباد چه قدر ؟ و ویران چند ؟ و باعث ویران و مزروع خاختن اراضی قابل زراعت اینموات مرسمی در ازدیاد ابادانی دهات ویران و مزروع خاختن اراضی قابل زراعت بقول در سد و قرار مناسب و افزونی جنس کامل بکار برد \* و هرجا چاه معطل باشد در مرمت آن واحداث دیگر چاهها بکوشد \* و جمع انزا بنوعی نشخیص دهد در مرمت آن واحداث دیگر چاهها بکوشد \* و جمع انزا بنوعی نشخیص دهد مرابط این احدے از رعایا تعدی ۸ نرسد - و هر سال نسخیجات از مشتمل بر قید تعداد مزارعان ۶ هر موضع و اراضی مزروعه و غیر مؤروعه چاهے و بارانی مزارعان ۶ هر موضع و اراضی مزروعه و غیر مؤروعه چاهے و بارانی و اجذاب کامل و ناقص و سر انجام مؤروع ساختن زمین لایق زراعت و افرونی و اجذابی کامل و ناقص و سر انجام مؤروع ساختن زمین لایق زراعت و افرونی

<sup>(</sup>d) Omitted by A.

عرش استانی . A (g)

<sup>(</sup>k) A. &5

از جمله .A (e)

<sup>(</sup>h) A . . . ve

چقەر B. چ

منتقل . A. (i)

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جنس کامل و آباد شدن دیهائے - که از سنوات ویران بوده - درست نموده در دستور العمل سابق آنچه زیاده مقرر شده باشد س تقصیل انوا با مقدار مبلغی که در مال تمام فواهم [.6 , 268] می آمده باشد معروض دارد \* و این ضابطه و پرداخت را از ابتدای خریف شمال ش ئیل سنه هشت از جلوس والا مقرر دانسته بدینموجب عمل نماید - و بعامالان محال جاگیرداران هم تاکید کنند که بهمین نمط کار بند شوند \*

اول آمکه معلق و چودهریان را در خلوت راه ندهد . و مقرر کند که سر دیوان حاضر میشده باشد \* و ریزهٔ رعایا و غربا که برای عرض حال بیایند آنها را در خلا و ملا راه داده بخود آشنا سازد - تا در اظهار حاجت معتاج بترسطهٔ غیری نباشند \*

دوم آنكه بعاملان قدعن نمايند كه سرسال ديه بديه و مزارع و تعداد قلبه و كميت و رقبه وا رسيده و اگر رعايا بحال باشد اهتمام كند كه هريك بقدر حال در ازدياد تخم ريزي كوشيده نسبت بسال گذشته افزوني مزروعات بعمل آرند \* و از جنس إدنا بجنس اعلى ميل نموده تا توانند زمين لايق زراعت افتاده نگذارند \* و اگر احد از كارندها فراري شده باشد وجهٔ آنوا در يابند و در مادهٔ معاودت او بمكان مالوف جهد بليغ بكار برند \* و و همچنين در فراهم آودن كشاورزان از اطراف و جوانب سعي ٣ مشكور و استمالت و دلاساي موفور بجا آرند \* و زمين بنجر بدستوريكه مزروع شود مقور مازند \*

سيوم آلكة — بامنامي پرگنات قاكيد نمايد كه سر سال بموجودات [269, a.] مزروعات ديه بديه اسامي وار وارسيدة جمع را از روى جزورسي بمقتضائ كفايت سركار و رفاهيت رعايا تشخيص نمايند \* و دول جمع بالأ اهمال بدفتر خانة والا ارسال دارند \*

چهارم آنکه ـ بعد تشخیص جمع مقور کنند که بر وفق موعود که در هر

<sup>(</sup>m) A. كمفي

علان نيل B. مالين ئيل A. علان

مزروع و تعداد ... B. مزارم و به تعداد . A.

<sup>(</sup>q) B. omits ميوم but begins و همچنين here.

بسعي فور و دلاسای بجا کوند .(۲) ا

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پرگذه اقساط ما لواجب قرار مي يابد - درين باب قدغن كند كه تحصيل محصول بر محال شروع نموده باز خواست موافق ميعاد بعمل آرند \* و خود هفته بهفته خبر گرفته تاكيد نمايد كه از قسط معين چيزى باقي نگذارند - واحياناً از قسط اول چيزى موقوف داشته باشد - در قسط دوم بقيد وصول در آرند - و در قسط سيوم بالقمام بي باق نمايند \*

ينجم انكة \_ باقئ سنوات را اقساط مناسب بقدر حالت و طاقت رعايه قرار دادة بكروريان قاكيد نمايد كه موافق وعدة به تحصيل در آيد \* و خود از سر انجام وصول آن و خبرياب باشد . و از غوايت و مساهلة عمال در تعويق نيفند \*

ششم آمكة — هرگالا حود براى دريافت حقيقت پرگفات در هر ديه كه عبور نمايد صررت مزروعات و ربع آن و استطاعت مزارع و قدر جمع بنظر در آورده - اگر در تفريق جمع بر هر واحد لا حق و حساب بعمل آمده باشد بهتر \* و اگر چودهري يا مقدم يا پتواري لا ستم شريخ نموده باشد - مزارع را مستمل [.6. 269] ساخته بحق رساند \* و گنجايش از تحت متغلبان برآرد - و بالفعل در نشخيص سال حال و تفريق موجودات آن از روی راستي و جزورسي پرادخته مفصل بر نگارد - تا حقيقت کار داني منا و حسن پرداخت آن لا طاهر شود \*

هُفتَم آنكة — ناكار و انعام موافق معمول سركار عمل خالصة شريفة بحال دارد \* و آنچة عاملان سركار عالي متعالىي افزودة باشد وا رسد - كه انجماعة از ابتداى تنخواه جاگير چة قدر باقي نگاهداشته ؟ و چة مقدار بصيغة كمي وآفت مجرئ گرفته ؟ نظر برينمراتبگذاشته را « باز يافت نمايد - و آينده موقوف دارد - كة هرگاه آنها « پرگنات را بحال اصلي « قرار خواهند داد عمد قيقت بعرض والا خواهد رسيد - در [خور] دولت خواهي بهر كدام رعايت خواهد شد \*

هشتم انکه - در فوطه خانه مقور کند که فوطه داران سکه مبارا عالمگیري

جزيات . B. & A. (8)

ربع یعنے ربعات (t)

<sup>(</sup>u) در حق B. gives. در حق

a بریکی B. ها (v)

امارت يذالا . B. الا

باز باقینماید .A (a)

<sup>(</sup>y) A. omits هرگاه

اصلی عود خراهند داد . ۵ (۵)

<sup>(</sup>aa) B. وحقيقت

بگيرند - و بر تقدير عدم وجود اين جنس رويده شاهجهاني چلني رايج بازار گرفته صرف سكه ابواب جمع نمايند \* اما رويده كموزن كه رايج بازار نباشد هوگر داخل فوطه خانه نكنند - و اگر بدانند كه در باز گردانيدن جنس ناقص تحصيل در تعويق مي افتد - وجه بدلائي موافق حق و حساب از رعيت گرفقه تبديل آزار و برو بعمل آرد \*

نهم آلکه سخدا نخواسته اگر آفت [.70, هماوي یا ارضي در معلی رو نهاید با با ارضی در معلی رو نهاید با با با تاکید بلیغ کندکه موجودات مزروعات را قوار واقع بکمال احتیاط نگاهبانی نهایند اف و به مزارع وا رسیده از روی جزورسی موافق هست و بود مشخص سازند \* وافت سر بسته - که تفریق آن ۵۰ باخبار چودهریان و قانونگو و مقدم و پاتواری باشد هرگز بعمل نیارند \* تا ریزه رعیت بعق رسیده از آسیب ۵۵ و نقصان ایمن ماند و متغلبان نتوانند تغلب کرد \*

دهم آنکه سدر باب عدم بلیه [؟] و رفع اخراجات زاید المال و ابواب ممنوعه که باعث تفریقهٔ حال رعایاست ، بامنا و عمال و چودهریان و قانونگویان و متصدیان ناکید بلیغ نمودهٔ مچلکات بگیرند که زیادتی بلیه واخذ ابواب ممنوعه مقطوعهٔ در گاهٔ خلایق پناه هرگز بعمل نیاید \* و خود همیشه و خبریاب باشد و اگر احدے بران اقدام نماید - و بمنع و تهدید باز نیاید - حقیقت را بحضور بنویسد - تا از گدمت معزول شود و بجای او دیگری منصوب گردد \*

یازدهم انکه برای بر امد کاغه هندوی بفارسی بحقیقت f باچه و بیهری مال و اخراجات و رسومات اسامی وار وا رسیده - هرچه بهمه جهت از خانه رعیت بر امده باشد واصلات فوطه خانه محسوب ساخته ـ مابقی تصرف امین و عامل و زمیدداران وغیر ذالک نام بنام بنویسد ـ و تا ممکن باشد تصرف امین و عامل و زمیدداران وغیر ذالک نام بنام بنویسد ـ و تا ممکن باشد [270,  $\delta$ .] کاغذ خام 99 تمام دیهات پرگذه فراهم اورده ترجمه نماید \* و اگر

<sup>(</sup>bb) Omitted by A.

خود زباني قانونگو الخ .B. خود

از سبب نقصان B. از سبب

جزيات. B. & A. الاه

و از الحج ه داري حال و اخوجات در سر سات اسامي و از الحج ه داري حال و اخوجات در سر سات اسامي و از الحج ه داري حال و بهتري مال

بنام ديهات . A (gg)

بسبب عدم وجود پتواري يا وجهي ديگر كاغذ مواضع معدود بدست نيايد ـ آن جزو را از روی بر آمد hh دیهات کلیه سواسی کرده داخل طومار کند \* ديوان را مي بايد كه بعد طيار شدن طومار اگر موافق دستور بقلم امدي باشد نگاهدارد . و وجه تصرف عملان موافق ضابطه ؟و تصرف چودهري و قانونگو و مقدم و پاواري ii انچه زياده از رسوم مقور گرفته باشد بمعرضي باز خواست در آره .

دوازدهم انکه - از جماعه آمنا و کرویان جاگیرداران هرکس که براستی دولتخواهي بتقديم خدمت قيام نهايد و موافق دستورے كه بقلم آمده در هر باب اقدام ورزيدة صراسم نكو خدمتي بنجا ارد بنويسد - كه در خور كفايت انديشي وديانت داري به نتَيجه بهرومند شود \* و اگر خلاف آن عمل نمايد حقیقت او را بحضور برنگارند که از خدمت معزول و از نوکری بر طرف شدید *پائی باز خواست و مواخذه اهمده سزای کودار ناهنجار در کنار خویش بیند \** 

سيزدهم انكه – گرداوري كاغذ سر رشته بناكيد تمام بوقت و هنگام نمايد و در محلم كه خود اقامت داشته باشد روز نامچة تحصيل مال و ساير و نرخنامه روز بروز [و] از پرگنات دیگر روز نامچهٔ تحصیل مال و موجودات پا نزده روزه و از سس تنبه [271, a.] تحويل فوطهدار و جمع واصلباني مالا بمالا و طومار جمع مجمل وجمع بندى وجمع خرج تحويل فوطفدار فصل بفصل از عاملان بقید تحصیل در آورده و آن را مالکظه نموده - ۱۰۰ انچه زواید از حساب مصروف شدی باشد بمعرض باز خواست در آوردی - بدفتر خانم والا ارسال دارد -وكاعد ربيع قاخريف موقوف نگذارد \* .

[27 1, 6.] چهارم دهم انکه ــ امين و عامل و فوطهدار که از خدمت معزول شود ـ كاغذ از انها بقاكيد قمام گوفقه عهر حساب آمد ـ و ابواب باز

ديهات بسنجد اكر موافق دستور بقلم امدة باشد نگاهدارد و بر جمله . A (hh) تصرف عملان

<sup>(</sup>jj) B. هجنا

A. کروریان و از ان هرکس B. کروریان داران هر کس (lik)

از شبهه <u>۸</u> (mm)

انچه براید یا تصرف شده باشد B. انچه

بسو حساب كرد و ابواب باز باقي از روى اليغ .B (pp)

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يافلني از روجي بدرنويسي موافق qq قاعده ديواني بمعرض باز خواست در آورده - الله از روجي بدرنويسي موافق qq قاعده ديواني بمعرمي والا بفريسد - كه از محاسبه دفتر فراغ حاصل نمايد \*

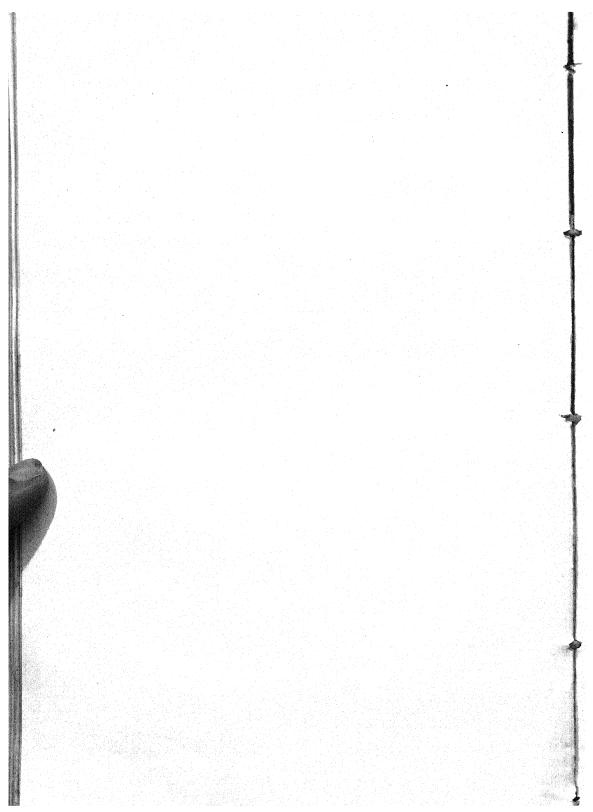
بانزدهم انكه سه المحمد المحمد

\* تمام شد \*

<sup>(</sup>qq) B. كافذ

كافذات را تاية سرشنة ابواب بدونويسي عامل معزول .B. كافذات را

الله مطابق قاعدة معدودة كافذات فصل بفصل مرتب ساخقه الني (ss) B.



32. Shāista <u>Kh</u>ān in Bengal (1664-'66).—By Jadunath Sarkar, M.A., Professor, Patna College, and Member, Asiatic Society of Bengal.

When Mir Jumla invaded Kuch Bihar and Assam, he had in his train an officer named Shihabuddin Tālish, who has left a detailed history of the expedition, named by the author the Fathiyyah-i-ibriyyah. A long abstract of it was given by Mr. Blochmann in the Society's Journal for 1872, Part I, No. 1, pp. 64-96. Our Society has a fine old MS. of this work (D. 72), and the Khuda Bakhsh Library three others. All these end with the death of Mir Jumla, 31st March, 1663.

But the Bodleian Library possesses a MS. of the work (No. Bod. 589, Sachau and Ethé's Catalogue, Part I, No. 240), supposed to be the author's autograph, which contains a continuation (folios 106, a-176, b.), relating the events immediately following and bringing the history down to Buzurg Ummed Khān's victorious entry into Chātgāon (Chittagong), 27th January, 1666. This portion is absolutely unique and of the greatest importance for the history of Bengal, as will be seen from the abstract I give below. I have procured photographic reproductions of these 71 leaves of the MS. The internal evidence is overwhelming in favour of the

Authorship. Continuation being regarded as Shihabuddin Tālish's work. The style is marked by the same brilliancy of rhetoric; many favourite phrases and turns of expression are common to both; and one peculiar sentence,

# ساكن داري و نافيخ ناري دران سر زمين نهستند \*

which I have found in no other Persian history, occurs in both (Conquest of Assam, p. 58 of our MS. D. 72, and Continuation, folio 124, a.). We have here (f. 156, b.) one instance of the author's vicious habit of running the variations of a single simile through a whole page of which there are three examples in the Conquest. The writer is the same hero-worshipper, only Shāista Khān here takes the place of Mir Jumla. Neither of them is named, but both are indicated by laudatory titles, Mir Jumla being Nawwāb Mustaghani-ālqāb, and Shāista Khān Nawwāb Mu'ala-ālqāb.

The author evidently died shortly after writing the Continuation, for it ends abruptly, without carrying on the campaign in the Chātgāon District to its conclusion. He had no time to give it the finishing touches: the material is loosely arranged; there is no regular division into chapters as in the Conquest, only three headings (surkhi) being given (ff. 150, b, 153, a, and 161, b.). Moreover, the author has

I suspect that there is a scrap of it at the end of an India Office MS. of the work, which Ethé in his Catalogue describes as narrating the conquest of Játkam (should be Chatgaon).

left blanks for dates in two places (ff. 149, b. and 175, b.), which he evidently meant to fill up after consulting other sources. Wrong dates are given in 106, a, and 167, a. and some obscurity has been introduced into the narrative by his passing over the first day of the siege of Chātgāon (25th January, 1666) in absolute silence.

I do not think that there is any good ground for holding with Sachau and Ethé that "this copy may be Shihab-al-din's autograph." Two lines of the previous page are repeated by mistake in f. 117, a. There are two lacunæ: 136, b. 6 and 169, a. 7. In some places blank spaces have been left, evidently for putting down headings in red (surkhi). All these facts go to show that the work is a mere copy and not the original. Besides, there are several errors of spelling of which an accomplished author and professional writer (wāqi'a-nawis) like Shihabuddin could hardly have been guilty.

#### ANALYSIS OF THE Continuation.

Official changes following Mir Jumla's death (106, a.-107, b.) Ihtishām Khān, left by Mir Jumla in charge of Dacca, now began to exercise supreme authority. Aurangzib ordered Dāud Khān, Subahdar of Bihar, to administer Bengal, pending the appointment of a pucca Subahdar; Dilir Khān to officiate until Dāud Khān arrived. Dāud Khān arrived near Dacca, 27th September,

1663, and stayed at Khizrpur.

Khizrpur commands the route of the pirates of Chātgāon (108, a.)—Decay of the Bengal flotilla, nawāra (108, b.)—Prodigality and corruption of the officiating governors (109, a.)—The pirates plundered Bhushna during the absence of the cruising admiral, sardār-i-sairāb (110, a.)—Dāud Khān on his own responsibility remitted the tithe (zakat) on grain, in order to relieve the scarcity at Dacca (110, b.)—True condition and causes of the decay of the flotilla (112, a.)—Shāista Khān enters Rajmahal, 8th March, 1664 (114, a.)—New appointments made by him (115, a.)—Shāista Khān pushes on shipbuilding (115, b.), demands help from the Captain of the Dutch (116, a.), plans to win over the Feringees of Chātgāon (116, b).

His internal administration: gives relief to jāgirdārs and āimadārs (117, a.-121, a.) translated below.—Raja of Kuch Bihar

makes submission.

Piratical incursion into Bagādia (122, a.)—Account of the pirates of Chātgāon (122, b.)—their oppression and sale of captives, (123, a.)—they desolate Bagla.—Cowardice of the Bengal navy (124, a.)—Anecdote of 'Aāshur Beg, cruising admiral (124, b.)—Former governors of Bengal only bent upon extorting money, but negligent of the duty of protecting the people (125, a.)—Author protests his veracity (126, a.) and then describes the ten merits of Shāista Khān (127, a.-132, b.) translated below.—'Aqidat Khān, faujdār of Dacca, makes defensive arrangements (133, a)—Shāista Khān's piety (133, b.)—Miracle at Rajmahal (134, a.).

Shāista Khān leaves Rajmahal, 16th October, and enters Dacca, 13th December, 1664. (134, b.-137, a).—Great exertions in building and equipping warboats (137, b.).—New arrangement for patrolling the rivers (138, b.)—Thana and port established at Sangrāmgarh (139, b.)—Causeway built from Dhāpa to Sangrāmgarh (140, a.)—Raja Indraman (=Indradumna) imprisoned for the rebellion of his clansmen (141, a.).—Portent at Makhsusābād (=Murshidabad) (142, a.).

Sondip, island, described (142, b.)—its forts—colonised by Dilāwwar, a runaway ship-captain of Jahangir's time (143, b.)—Dilāwwar defeats the Arracanese and reigns supreme (144, a.)—Abul Hassan ordered by Shāista Khān to spy out the nakedness of Sondip (145, a.)—His ruse (145, b.)—The Nawwāb prepares for

a regular siege of Chātgāon (146, a.).

First invasion of Sondip by Abul Hassan, 9th November, 1665 (147, a. and b.)—Second invasion of Sondip, 18th November, 1665 (148, b.)—Capture of Dilawwar and his son Sharif (149)

-Mughal rule established in the island (150, a.).

The winning over of the Feringees of Chātgāon (150, b.):—The Nawwāb tempts them by various men (151)—They come over to Farhād Khān at Noākhāli, with their families and boats (152, a.)—Conversation between Shāista Khān and the Feringee leader,

Captain Moor (152).

Description of Arracan (153, a.)—Three Arracanese invasions of Bengal (154, b.)—Reasons for the Nawwāb not commanding the Chātgāon expedition in person (157, a.)—Buzurg Ummed Khān, the commander of the expedition, starts from Dacca, 24th December, 1665 (158, a.)—Composition of his force (158, b.)—Jungle-clearing and road-making (159, b.)—Expeditionary force constantly supplied with provisions (160, a.).

Army advances, step by step, in co-operation with the flotilla (161, a.)—Ibn Husain, the admiral, enters the creek of Khamaria,—van of the land force joins him, 21st January, 1666 (161, a. and b.).

Capture of Chātgāon (161, b.):—The impassable barrier between Bengal and Chātgāon (162, b.)—Chātgāon fort described (163, a.-164, a.)—Ibrahim Khān's expedition to Chātgāon failed (164, b.)—Anxiety about the success of Shāista Khān's expedition (165, b.-167 a.).

First naval battle, 22nd January,—the Arracanese put to

flight, 10 ghurābs captured (167, b.-168, a).

The two fleets again face each other—night of 23rd January spent in distant cannonade.—Second naval battle, 24th January, (169, a. & b.)—The Arracanese retreat into the Karnphuli river.—The Mughals close its mouth (170, a.), burn three stockades on the bank, and then attack and capture the Arracanese navy (170, b.-171, a.).

The Arracanese garrison evacuate Chātgāon fort, night of 25th January (171, b.)—Mughal generals enter it (172, a.) on the

26th. Fort opposite Chātgāon also evacuated.

News of the conquest reaches Dacca, 29th January. Rewards granted by the Nawwab and the Emperor (172, b.-173, b.).

Exultation in Bengal.—How the conquest benefited the Exchequer (174, b.).

Buzurg Ummed Khān enters Chātgāon fort, 27th January,

restores order, and conciliates the people (175, b.).

Previous attacks of the Bengal forces on the Arracanese (176, a. and b.).

The Continuation, therefore, supplies us with useful and origi-Heads of Information on the following four subjects:—

(1) Shāista Khān's administration of Bengal up to January 1666. (2) The system of piracy followed by the Feringees of Chātgāon, and a record of the various Magh incursions into Bengal and Bengal attacks on the Maghs. (3) A description of Sondip and the history of its conquest. (4) A description of Chātgāon and the history of its conquest.

I shall deal with the first only in this article.

## SHĀISTA KHĀN'S CIVIL ADMINISTRATION.

## (Translation.)

[117, a.] The mansabdars had their jagirs situated in different parganahs, and the multiplicity of co-partners led to the ryots being oppressed and the parganahs desolated. Large sums were wasted [in the cost of collection] as many siqdars and 'amlas had to be sent out by [every] jagirdar. Therefore, the Nawwāb ordered the diwān-i-tan to give every jagirdar tankha in one place only; and, if in any parganah any revenue remained over and above the tankha of a jagirdar [117, b.], it was to be made over to the jagirdar for collection and payment into the public treasury. Thus the department of Crownlands would make a saving by not having to appoint collectors [of its own in the parganahs of jagirdars]; and, secondly, it was not good for one place to have two rulers [viz., the jagirdar's and Government collectors]. The divān-i-tan set himself to carry out this work.

Next, Shāista Khān learnt the truth about the appointments and promotions made after Mir Jumla's death by the acting Subahdars. Most of these men were now dismissed; a few, who were really necessary for the administration, were retained in service. I have noted this difference between Shāista Khān and other servants of the Crown, in the matter of saving Government money, that they desired solely to gain credit with the Emperor, while his aim is pure devotion and loyal service. He considers the parading of this fact as akin to hypocrisy and remote from

true devotion and fidelity.

At this time the āimadārs and stipend-holders of the province of Bengal began to flock to the Nawwāb to make complaints [118, a.]. The facts of their case were:—After the reign of Shah Jahan, the late Khān-i-khānān [Mir Jumla] confirmed in his own

jagirs many of these men who were celebrated for devotion to virtue and love of the Prophet's followers, and some who had got farmans of the Emperor. All other men who had been enjoying madd-o-m'aāsh and pensions in the Crownlands and fiefs of jagirdars, were violently attacked by Qāzi Rizwi, the Sadr; their sanads were rejected and their stipends and subsistence cancelled. It was ordered that the āimadārs should take to the business of cultivators.//till all the lands they held in madd-o-m'aāsh, and pay revenue for them to the department of Crownlands or to the jagirdars. And, as in carrying out this hard order these poor creatures could not get any respite, many who had the capability sold their property, pledged their children [as serfs], and thus paid the revenue for the current year [118, b.], preserving their lives as their only stock for the next year. Some, who had no property, brought on themselves torture and punishment, gave up their lives, and thus escaped from all anxiety about the next year.

# [Verse.]

Like fire they ate sticks [i.e., received beating] and gave up gold [or sparks],
And then, through loss of strength, they fell down dead in misery.

And now even by the resumption of the cultivated lands sufficient gain in the form of produce cannot be collected, because the āimadārs abstain from tilling the lands that have been escheated to the State; and even the chastisement and pressure of the 'amlas cannot make them engage in cultivation. And so the land remains waste and the āimadars poor and aggrieved. Owing to the great distance and the fear of calamities, these poor perplexed sufferers could not go to Delhi to report their condition fully to the Emperor and get the wicked and oppressive officials punished [119, a.]. Hence their sighs and lamentations reached the sky.

One Friday, the Nawwab, as was his custom, went [to the mosque] to offer his Friday prayer. After it was over he learnt that an old aimadur had suspended his head upside down, one yard above the ground, from a tree near the mosque, and that he was on

the brink of death and was saying:

# [Verse.]

Shall my life return [to my body] or shall it go out,—what is thy command?

The Nawwāb ordered the author to go and ask the reason. I went to the old man and inquired. He replied, "My son, who held thirty bighas of land in madd-o-m'aāsh, has died. The amlas now demand from me one year's revenue of the land. As I have no wealth, I shall give up my life and thus free myself [from the oppression]." I reported the matter to the Nawwāb, who gave

him a large sum, and then confirmed his son's rent-free land on him.

[Verse.]

God favours that man, Whose life gives repose to the people. [119, b.]

The wise know that the resumption of the lands of āimadārs and the cutting off of the subsistence of stipend-holders bring on great misfortunes and terrible consequences [on the wrongdoer]. I have seen some among the rulers of this country who engaged in this wicked work and could not live through the year.

## [Verse.]

The dark sigh of sufferers, in the heart of dark nights, Snatches away by [God's] command the mole of prosperity from the cheek of the oppressor.

It is a lasting act of virtue and an undying deed of charity to bestow  $iml\bar{a}k$  on the needy and  $idr\bar{a}r$  on the poor. The hindering of such liberality and the stoppage of such charity does not bring any gain in this world and involves one in the Creator's

wrath in the next.....

[120, a.] One day there was a talk on this subject in the Nawwāb's court. As "the words of kings are kings among words," he remarked, "If a man has not grace enough to increase the gifts made to these [poor] people, he should at least not deprive them of what others gave them [120, b.], because.....these people, too, should be counted among the needy. And one should not through his own meanness of spirit and vileness of heart

resume the charitable gifts of others."

In short, the Nawwab's natural kindness having been excited. he ordered that Mir Sayvid Sādig, the Sadr, should fully recognise the madd-o-m'aāsh and wazifa which these men had been enjoying in the Crownlands according to the reliable sanads of former rulers. As for what was held [rent-free] in the fiefs of jagirdars, if it amounted to one-fortieth of the total revenue of the jagirdar, he should consider it as the zakat on his property and spare it. But if the rent-free land exceeded one-fortieth [of the total jagir], the jagirdar was at liberty to respect or resume [the excess]. Whosoever held whatever rent-free land in the parganahs of the jagir of the Nawwab, on the strength of the sanad of whomsoever, was to be confirmed in it without any diminution, and was on no account to be troubled [by demand of revenue]. As for those who had no means of subsistence and now, for the first time, begged daily allowances and lands in the jagir of the Nawwab, the diwani officers were ordered to further their desires without any delay.

The Sadr carried out the above order in the case of the Crownlands and the jagirs of [other] jagirdars [121, a.]. In the jagir of the Nawwāb his diwān-i-bayutāt, Khawājah Murlidhar,—who had been brought up and trained in the Nawwāb's household,

was marked by honesty and politeness, possessed his master's confidence and trust, and, in spite of his still being in the flower of youth, had the wisdom and patience of old men,—displayed in this work of benevolence such zeal and exertion as, I pray, God may favour all Musalmans with. Every day two to three hundred āimadārs presented their sanads to him and then departed. Next day, in the presence of the Nawwāb, he passed them through the Record office and sealed them, and then gave them back to the āimadārs. In short, he exhibited such great labour and praiseworthy diligence in this business, that every one of this class of men got what he desired. And the aforesaid Khawājah gained good name and respect for himself, temporal and spiritual welfare for his master, and prayers for the perpetuation of the empire for the Solomon-like Emperor. (Verse) [121, b.]

That man's influence with the king is a blessed thing, Who forwards the suits of the distressed.

## SHAISTA KHAN'S GOOD DEEDS.

(Translation.)

[127,  $\alpha$ .] I. His exertions for conquering the province and fort of Chātgāon; the suppression of the pirates, and the consequent relief of the people of Bengal.

II. Every day he held open  $darb\bar{a}r$  for administering justice, and quickly redressed wrongs. He regarded this as his most im-

portant duty.

III. He ordered that in the parganahs of his own jagir everything collected by the revenue officers above the fixed revenue

should be refunded to the ryots. [127, b.]

IV. The former governors of Bengal used to make monopolies  $(ij\bar{a}ra)$  of all articles of food and clothing and [many] other things, and then sell them at fanciful rates which the helpless people had to pay. Shāista Khān restored absolute freedom of buying and selling.

V. Whenever ships brought elephants and other [animals] to the ports of the province, the men of the Subahdar used to attach (gurq) them and take whatever they selected at prices of

their own liking. Shāista Khān forbade it.

VI. His abolition of the collection of zakat (i.e.,  $\frac{1}{40}$  of the income) from merchants and travellers, and of custom ( $h\bar{a}sil$ ) from artificers, tradesmen and new-comers, Hindus and Musalmans

alike. The history of it is as follows:—

From the first occupation of India and its ports by the Muhammadans to the end [128, a.] of Shah Jahan's reign, it was a rule and practice to exact hāsil from every trader,—from the rose-vendor down to the clay-vendor, from the weaver of fine linen to that of coarse cloth,—to collect house-tax from new-comers and hucksters, to take zakat from travellers, merchants and stable-

<sup>1</sup> Khush-nushin, which may also mean 'well-to-do men.'

keepers (mukāri). As S'adi has said, "At first oppression's basis was small; but every successive generation increased it," [so it happened], till at last in all provinces, especially in Bengal, it reached such a stage that tradesmen and merchants gave up their business, householders took to exile, saying—

# [Verse.]

"We shall flee from the oppression of the Age, To such a place that Time cannot track us there."

The rulers, out of greed for hāsil, gave them no relief. On the roads and ferries matters came to such a pass that no rider was allowed to go on unless he paid a dinār, and no pedestrian unless he paid a diram. On the river-highways if the wind brought it to the ears of the toll-collectors  $(r\bar{a}h-d\bar{a}rs)$  that the stream was carrying away a broken boat without paying hāsil, they would chain the river [128, b.]. If the toll-officers heard that the wave had taken away a broken plank [without] paying zakat, they would beat it on the back of its head in the form of the wind. They considered it an act of unparalleled leniency if no higher zakat was taken from rotten clothes actually worn [on the body] than from mended rags, and a deed of extreme graciousness if cooked food was charged with a lower duty than uncooked grains. None of the Delhi sovereigns, in spite of their efforts to strengthen the Faith and follow the rules of the Prophet, put down these wicked and [canonically] illegal practices, but connived at them. Only, we read in histories, Firuz Shāh forbade these unjust exactions. But after him they were restored, nay increased. But when, by the grace of God [129, a.] Aurangzib ascended the throne, he sent orders to the governors of the provinces and the clerks of the administration not to do such things in future. He thus gave relief to the inhabitants of villages and travellers by [129, b.] land and sea from these harassments and illegal demands. The learned know that no other king of the past showed such graciousness, made such strong exertions, and remitted to the people such a large sum—which equalled the total revenue of Turan.

# [Verse.]

O God! Keep long over the heads of the people, This King, the friend of holy men, Whose shadow gives repose to the people. Through the guidance of [Thy] service, keep his heart alive.

I strongly hope that, just as the peasants and merchants have been released from oppression and innovations [in taxation], so someone would fully and freely report to the Emperor the distress among the soldiery and the fact of their being harassed and crushed by the oppression of the thievish clerks, and thereby release the soldiers from the tyranny of these godless men [130, a.]. The army is treated by the Hindu clerks, and drowsy

writers as more degraded than a fire-worshipping slave and more unclean than the dog of a Jew. Whenever that forked-tongued cobra, their pen, brings its head out of the hole of the ink-pot, it does not write on the account-book (tumār) of their dark hearts any letter except to pounce upon and snatch away the subsistence of the soldiers. Indeed, when their tongue begins to move in the hole of their mouth, it does not spit out anything except curtailing the stipends of the soldiery. At times they would senselessly

split a hair, and do not abstain from numerous unjust fines.

Again, if after life-long exertion and the showering of bribes. they are induced to sign the fard-i-chehra of any soldier, then, at the time of branding  $(d\bar{n}gh)$ , they designate a charger worthy of Rustam as a mere pack-horse, and on the day of verification (tashiha) they describe [in the records] a horse that stands erect as fit for the yoke جوگيو, a horse that bends its leg as lame, a horse that shies as doubtful ahorse that lacks a particle of hair as Taghlibi. They call a Daudi coat of mail the film of a wasp يردة زنبور and a steel helmet itself a small linen cap. They regard a Rustam as a Zāl, and a Zāl as a mere child. May God the Giver [130, b.] reward with the long life of Noah, the patience of Job, and the treasures of Corah that valiant man. brave like Asfandiar, who after traversing these hill-tops (=hindrances) gets his tasdiq yad-dasht qabz and barat passed through the Haft-khan of the accounts department, so that his business may be done. In the shambles of the kachāri of Crownlands stipendholders have to flay themselves [before getting their dues], and at the sacrificial altar of the office of the diwan-i-tan tankha-dars find it necessary to root out their own lives. O ye faithful! Did man ever hear of such tyranny as that each letter of the identificationmarks of the record office should be written by a [different] clerk? O ye Muslims! Did man ever see such oppression as that one word has to be written by ten men? In [making out] the assignmentpaper (barāt) they decrease the tankha due and magnify the deduction to be made. If, through a mistake, the balance is entered in the receipts (qabuz), they treat it as a true record and appropriate the amount to themselves. And they think that they have conferred a great obligation if they consent to [issue such a paper as] this:—"In the parganah of Wiranpur (city of Desolation) in the sarkār of 'Adamābād (Depopulation), tracts are assigned on the revenue in jagir [to the duped soldier?] and [he should] demand from the jagirdar Khāna-kharāb (Ruined) the arrears of many years at this place." A day's difference in the verification (tashiha) is seized upon as a ground for making a year's deduction [from the trooper's pay.] If a man has entered service on the 1st Farwardi, they assign tankha to him from the end of the coming Asfandar. For the single grain of wheat (=fruit of the tree of knowledge, in Muslim mythology] which Father Adam, in his jagir of the sarkar of Januatabad (Paradise), ate without [131, a.] authorisation, they demand from his progeny refund amounting to an ass's load. If a man's pay is due for 3 years, they designate it as one for many years and then write [only] one-half of it (?). The faces of the clerks of the taujih (description-roll) are disagreeable. The answer of the author of this journal is, "The state of not being in need is better, without the need of taking oaths [to it]." No harm has been done to me by these men (the clerks), and no confusion has been introduced into my affairs by them; but [I write] from seeing and hearing what they have done to the helpless and the weak in the court [of the Nawwāb] and in the provinces far and near.

### [Verse.]

My heart is oppressed, and the pain is so great, That so much blood gushes out of it.

In short, the Emperor's orders for abolishing zakat and hāsil, sent to Bengal, were for abolishing them in the parganahs of the Crownland. The Nawwāb had a free choice in his jagir with regard to all exactions except the rāhdāri and the prohibited cesses (ābwābs). But this just, God-fearing, benevolent governor, out of his sense of justice and devotion to God, abolished the hāsil amounting to 15 lacs of rupees which used to be collected [131, b.] in his own jagir, and he thus chose to please God, relieve the people, and follow his religious master (Aurangzib).

VII. In many parganahs the despicable practice had long existed that when any man, ryot or newcomer (khush-nashin), died without leaving any son, all his property including even his wife and daughter was taken possession of by the department of the Crownlands or the jagirdar or zemindar who had such power; and this custom was called ānkura [=hooking]. The Nawwāb put

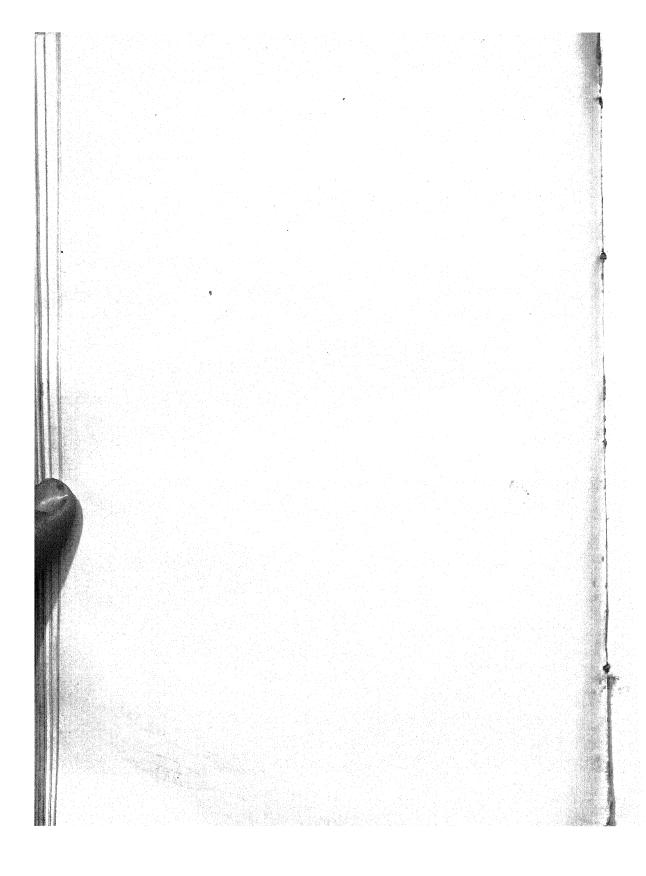
down this wicked thing.

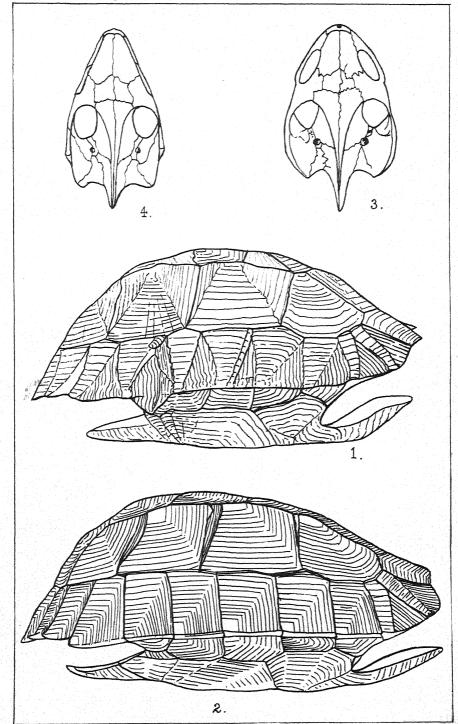
VIII. In the kotwāli chabutras of this country it was the custom that whenever a man proved a loan or claim against another, or a man's stolen property [was recovered], the clerks of the chabutra, in paying to the claimant his due, used to seize for the state one-fourth of it under the name of "fee for exertion." The Nawwāb abolished it.

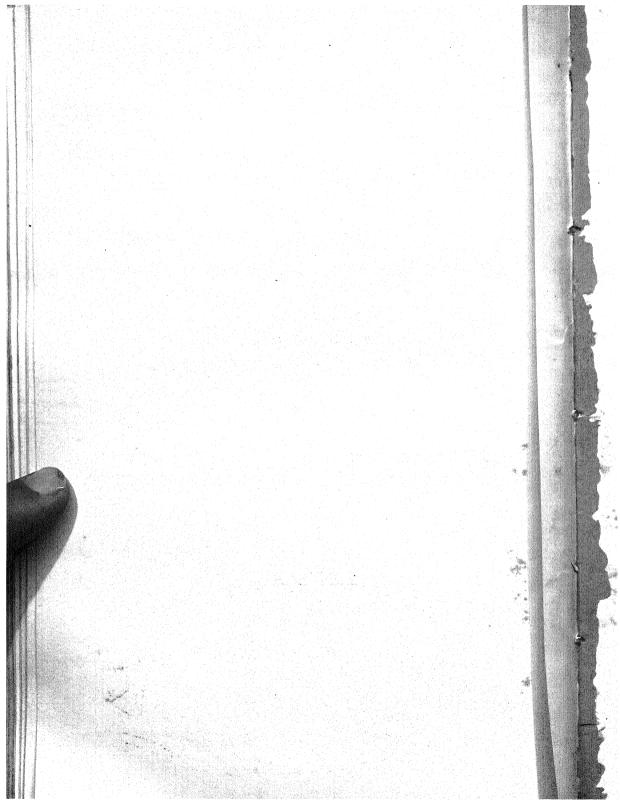
IX. When the plaintiff and defendant presented themselves at the magistracy (muhakuma) both of them were kept in prison until the decision of their case, lest it should be wilfully delayed (?). And their liberators  $(itl\bar{a}q - goi\bar{a}n)$  took daily fees from the prisoners and paid them into the State. This custom, too, was now abolished.

X. The courtiers [132, a.] used daily to present to the Nawwāb many needy persons, and he made them happy with gifts of money. When he set out on a ride or dismounted at a stage or took a walk, and also on the day of 'Id and other holy days, in addition to [supporting] the established almshouses, he used to invite the populace and feed vast numbers to satiety at the tables he spread. His profuse charity so thoroughly removed poverty

and need from Bengal that few hired labourers or workmen could be had [for money] to do any work.....Every year he used to send to all the provinces vast sums for the benefit of the faqirs, orphans, and motherless children, and thus laid in viaticum for his last journey.







# JULY, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 4th July, 1906, at 9-15 P.M.

A. EARLE, Esq., I.C.S., Vice-President, in the chair.

The following members were present:-

Dr. N. Annandale, Babu Sasi Bhushan Bose, Mr. I. H. Burkill, Mr. J. A. Chapman, Mr. B. L. Chaudhuri, Mr. L. L. Fermor, Mr. H. G. Graves, Mr. T. H. D. La Touche, Dr. H. H. Mann, Dr. M. M. Masoom, Major F. P. Maynard, I.M.S., Mr. R. D. Mehta, Lt.-Col. D. C. Phillott, Mr. G. E. Pilgrim, Major L. Rogers, I.M.S., Mr. R. R. Simpson, Mr. G. H. Tipper, Mahamahopadhyaya Satis Chandra Vidyabhushana, Mr. E. Vredenburg, Mr. E. H. Walsh, Mr. E. R. Watson, The Rev. A. W. Young.

Visitors:—Kumar Kshitindra Deb Rai Mahasai, Mr. J. M. Maclaren, The Rev. E. C. Woodley.

The minutes of the last meeting were read and confirmed.

Twenty-seven presentations were announced.

The General Secretary announced that Kumar Birendra Chandra Singh had expressed a wish to withdraw from the Society.

The Chairman announced that Major F. P. Maynard, I.M.S., had been appointed Secretary of the Medical Section of the Society.

The Rev. E. C. Woodley, Principal, L.M.S. College, Bhowanipur, proposed by the Rev. A. W. Young, seconded by Mr. D. Hooper; Lt.-Col. G. F. A. Harris, M.D., F.R.C.P., I.M.S., Professor of Materia Medica, Medical College, Calcutta, proposed by Major F. P. Maynard, I.M.S., seconded by Major L. Rogers, I.M.S.; Lt.-Col. F. S. Peck, I.M.S., Professor of Midwifery, Medical College, Calcutta, proposed by Major F. P. Maynard, I.M.S., seconded by Major L. Rogers, I.M.S.; Major D. M. Moir, M.D., I.M.S., Professor of Anatomy, Medical College, Calcutta, proposed by Major F. P. Maynard, I.M.S., seconded by Major L. Rogers, I.M.S., Seconded by Major J. Lloyd T. Jones, M.B., I.M.S., Assay Master, H.M's Mint, Calcutta, proposed by Major L. Rogers, I.M.S., seconded by Major F. P. Maynard, I.M.S.; Major J. Mulvany, I.M.S., Superintendent, Presidency Jail, Calcutta, proposed by Major L. Rogers, I.M.S., seconded by Major F. P. Maynard, I.M.S.; Captain J. G. P. Murray, M.B., I.M.S., Second Resident Surgeon, Presidency General Hospital, Calcutta, proposed by Major L. Rogers, I.M.S., seconded by Major F. P. Maynard, I.M.S.; Major E. Harold Brown, M.D., M.R.C.P., I.M.S., Civil Surgeon of the 24-Parganas, proposed by Major F. P. Maynard,

I.M.S., seconded by Major L. Rogers, I.M.S.; Captain F. P. Connor, F.R.C.S., I.M.S., in Medical Charge, 13th Rajputs, Alipur, proposed by Major F. P. Maynard, I.M.S., seconded by Major L. Rogers, I.M.S.; Dr. Arnold Caddy, F.R.C.S., Eng., proposed by Mr. W. K. Dods, seconded by Major F. P. Maynard, I.M.S.; were ballotted for and elected as Ordinary Members.

Mr. I. H. Burkill exhibited two host-plants of *Thesium himalayense*, Royle. The roots of *Thesium himalayense* were traced to suckers entering roots of *Andropogon contortus*, Linu., and *Micromeria biflora*, Benth., at Alsundi, in the State of Suket, North-Western Himalaya.

Mahamahopadhyaya Satis Chandra Vidyabhushana exhibited a Tibetan almanac for 1906-1907, prepared by a Mongolian Lama living near Lhasa and containing figures of stars, etc., and prognostications of coming events.

The following papers were read:-

- 1. On some Freshwater Entomostraca in the Collection of the Indian Museum, Calcutta.—By R. Gurney. Communicated by Dr. N. Annandale.
- 2. An old form of Elective Government in the Chumbi Valley.—By E. H. Walsh, I.C.S.
- 3. Preliminary note on the Chemical Examination of the Milk and Butter-fat of the Indian Buffalo.—By E. R. Watson, M.A., B.Sc.
- 4 A new Gecko from the Eastern Himalayas.—By N. Annan-Dale, D.Sc., C.M.Z.S.
- 5. Freshwater Fauna of India. No. VIII.—Some Himalayan Tadpoles.—By N. Annandale, D.Sc., C.M.Z.S.
- 6. Some Street Cries of Persia.—By LIEUT.-Col. D. C. PHILLOTT, Secretary, Board of Examiners, Calcutta.
- 7. Proposed correction with regard to the reading of an inscription on some of the Suri dynasty coins.—By Col. C. E. Shepherd Communicated by the Philological Secretary.

This paper will be published in a subsequent issue of the Journal and Proceedings.

- 8. A Parasite upon a Parasite. A Viscum apparently V. articulatum, Burm., on Loranthus vestitus, Wall., on Quercus incana. Roxb.—By I. H. Burkill.
- 9. Gentianacearum Species Asiaticas Novas descripsit I. H. Burkill.
- 10. Swertiam novam japonicam ex affinitate Swertise tetrapterse, Maxim, descripserunt S. le M. Moore et I. H. Burkill.

# LIBRARY.

The following new books have been added to the Library during June, 1906:—

ABHIDHAMMA PITAKA. The Vibhanga, being the second book of the Abhidhamma Pitaka. Edited by Mrs. Rhys Davids. London, 1904. 8°.

One of the Publications of the Pali Text Society.

Assam District Gazetteers. Vols. I, Cachar; II, Sylhet; III, Goalpara; V, Darrang; VI, Nowgong; VII, Sibsagar. Allahabad. 1905-06. 8°.

Presd. by the Government of Eastern Bengal and Assam.

- Aston, W. G. Shinto—the way of the gods.

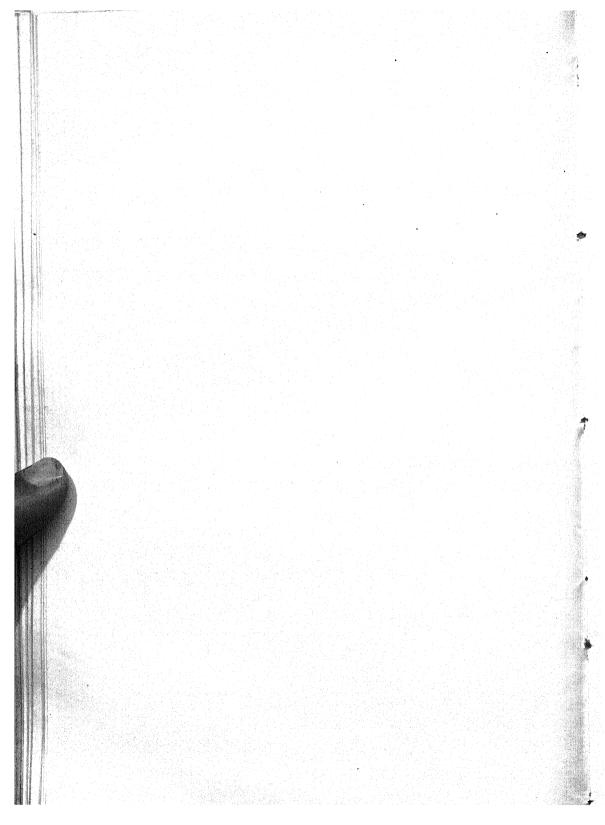
  London, New York, and Bombay, 1905. 8°.
- Barthélemy, Marquis de. Au Pays Moï. Ouvrage accompagné de...gravures hors texte et de...cartes. Avec le portrait de l'auteur. Paris, 1904. 8°.
- Bibliotheca Geographorum Arabicorum. Pars Tertia. Descriptio Imperii Moslemici autore Shams ad-din Abū Abdallah Mohammed ibn Ahmed ibn abī Bekr al-Baunā al-Basshārī Al Moqaddasi. Edidit M. J. de Goeje. Editio Secunda. Lugduni Batavorum, 1906. 8°.

Presd. by Mons. M. J. de Goeje.

- Caland, W. and Henry, V. L'Agnistoma. Description complète de la forme normale du sacrifice de soma dans le culte védique. Tome I, etc. Paris, 1906, etc. 8°.
- CAMBRIDGE ANTIQUARIAN SOCIETY. Octavo Publications, No. 42.
  The Place-names of Bedfordshire. By Rev. W. W. Skeat.
  Cambridge, 1906. 8°.

Presd. by the Society.

- Crooke, William. Things Indian: being discursive notes on various subjects connected with India. London, 1906. 8°.
- Cuinet, Vital. La Turquie D'Asie. Géographie administrative, statistique descriptive et raisonnée de chaque province de l'Asie-Mineure. 4 vols. and an alphabetical table. Paris, 1892. 8°.



- Hirt, Herman. Die Indogermanen. Ihre Verbreitung, ihre Urheimat und ihre Kultur...mit...abbildungen, etc. Band I, etc. Strassburg, 1905, etc. 8°.
- Hodson, T. C. Thado Grammar. Shillong, 1906. 8°.

Presd. by the Government of Eastern Bengal and Assam.

- Jagadis Chunder Bose. Plant Response as a means of Physiological investigation...With illustrations.

  London, 1906. 8°.
- Lacôte, Félix. Une version nouvelle de la Brhatkathā de Guṇādhya. Paris, 1906. 8°.

Extrait du Journal Asiatique, 1905.

Presd. by the Author.

MacDonald, J. R. Geography of New Zealand for Senior Pupils in the Public Schools, Scholarship Candidates, and Pupil Teachers...With...maps and...illustrations.

Wellington, 1903. 8°.

Presd. by the New Zealand Government.

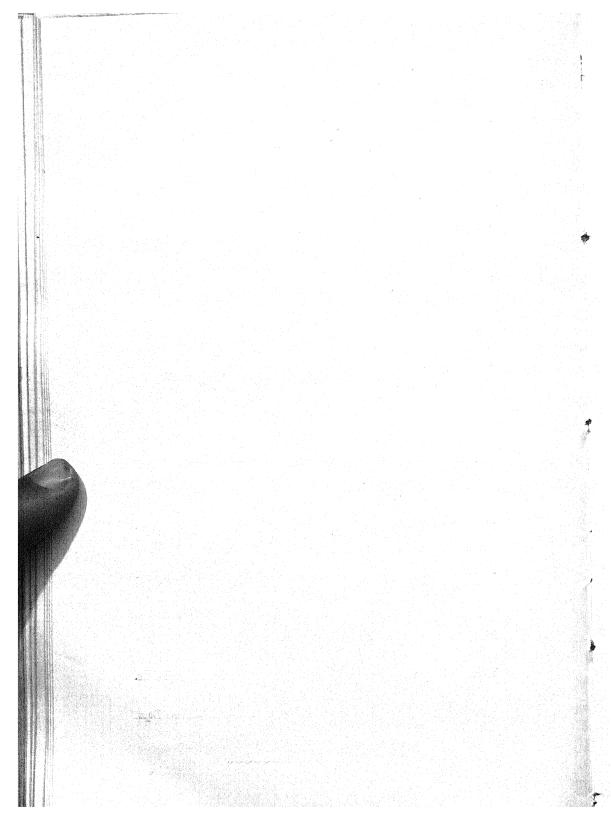
- MANCHESTER—University of Manchester. Economic Series, No. 2.
  Cotton spinning and manufacturing in the United States of America. A report. By T. W. Uttley.

  Manchester, 1905. 8°.
- ——Lectures, No. 3. Bearing and Importance of Commercial Treaties in the Twentieth Century. A lecture...By Sir T. Barclay. Manchester, 1906. 8°.
- ——Medical Series, No. 4. Course of Instruction in Operative Surgery...By W. Thorburn. Manchester, 1906. 8°.

Presd. by the University.

- Morgan, J. de. Les Recherches Archéologiques leur but et leurs procédés. *Paris*, 1906. 8°.
- United Provinces of Agra and Oudh District Gazetteess. Vol. VIII, Agra. Allahabad, 1905. 8°.

Presd. by the Govt of India, Home Dept.



33. Parasites from the Gharial (Gavialis gangeticus, Geoffr.)—By Dr. von Linstow, Goettingen. Translated by Paul Brühl. Communicated by N. Annandale. (With 1 plate.)

[The specimens on which Dr. von Linstow has been kind enough to furnish the following report were obtained from two Gharials which died recently in the Calcutta Zoological Gardens. The stomach of one of these also contained an undetermined Ascaris. There is no reason to think that the death of the reptiles was in any way due to the parasites.—N. A.]

#### NEMATODA.

Micropleura vivipara, nov. gen., nov. sp.

Fig. 1-2.

From the mesentery:

The genus Micropleura is related to Filaria; the anterior end is provided with neither teeth nor lips; the lateral lines are low and narrow and are without a canal; an excretory pore is wanting, the genus belonging to the Resorbentes; the caudal end is rounded; the male has, on each side, a thickening ending in a papilla; the female is viviparous, and the vulva is not far distant from the middle of the body; spicules of equal size. The muscular system is strongly developed; the lateral lines are feeble, broader outwardly than inwardly, occupying only of the circumference of the body; the anterior end is roundish with 6 papillæ which are arranged in a circle and are little prominent; the oral aperture is small and circular; the length of the esophagus amounts to  $\frac{1}{7}$  of the total length of the body in the male, and to 71 in the female; it commences with a vestibulum which is about one-fourth the length of the esophagus; the cuticle is smooth; the nerve-ring is situated at the end of the vestibule.

The male is 35 mm. long and 0.72 mm. in diameter;  $\frac{1}{580}$  of the total length of the animal is occupied by the caudal end; the latter bears ventrally on each side three small papillæ arranged in an arc, further one postanal papillæ placed on a roundish elevation, on each side, and behind these on one side of the short

tail a small papilla; spicules 0.47 mm. long.

The female attains a length of 37 mm and a width of 0.79 mm; the tail measures  $\frac{1}{138}$  of the total length; the vulva is situated somewhat in front of the middle of the body; it divides the length of the body in the proportion of 5:6; attached to the front and back of the uteri are ovaries the length of which amounts to  $\frac{1}{16}$  of the length of the body; the sexual organs leave about one-tenth of the body free in front as well as behind. The embryo is 0.57 mm long and 0.017 mm in diameter; the cuticle is marked with sharply defined transverse rings, and the caudal end is long and fine-pointed; the anterior end is rounded.

Typhlophoros lamellaris, nov. gen, nov. sp.

Fig. 3-5.

From the stomach: The genus Typhlophoros also belongs to the Resorbentes; the lateral lines are without a canal; they are broad and low, and occupy about 1 of the circumference of the body; the anterior end has 3 lips, and behind these is a cuticular thickening consisting of longitudinal ribs; the lateral lines are raised into longitudinal ridges; on the dorsal side of the esophagus a cecal prolongation of the intestines extends right to the anterior end of the body; the males possess two equal spicules. The cuticle is smooth; the anterior end of the body has three lips which are triangular and narrowed at their base; the pulpa is wider in front; the dorsal lip bears two papillæ: behind it is a cuticular thickening which consists of sixteen finely and transversely striated longitudinal ridges, 0.12 mm. long; caudal end pointed; the longitudinal ridge which runs along the lateral lines has an equilaterally triangular cross-section; the intestines possess a high epithelium; in the parenchyma of the intestinal wall occur deep-black oval nuclei.

The male is 11 mm long and 0.31 mm, in diameter; the candal end is  $\frac{1}{141}$  of the length of the body; on each side of it are placed four preanal papillæ; the equal-sized curved spicules

measure 0.60 mm.

In the female, which is 16 mm. long and 0.32 mm in diameter, two roundish projections are situated in front of the anus, the caudal end occupies 10 of the whole length of the body; the vulva is placed somewhat in front of the middle of the body and divides the length in the ratio of 4:5; the caudal end is curved towards the dorsal surface; the eggs have a thick shell; their length is 0.073 mm, their breadth amounts to 0.062 mm.

## LINGUATULIDÆ.

Porocephalus indicus, nov. sp.

Fig. 6-10.

From trachea and lungs:

Only females have been found. Rather young specimens are 20 mm. long and 2 mm. broad; behind the thin anterior end the body is thickened and spindle-shaped, attaining a width of 1.18 mm.; behind this it contracts to a narrow neck 0.79 mm. in diameter; older animals are 24 mm. long and 5 mm. in diameter; the diameter here is nearly uniform. On the ventral side the cuticula is transversely ringed at regular intervals of 0.44 mm., the rings occupying 3 of the circumference; the muscle-fibres run in four directions, transversely, longitudinally, and obliquely in two directions making equal angles with each other; the anterior and posterior ends are roundish. On the lateral edges of the rings there are posteriorly finger-shaped prolongations, which become smaller and

smaller further back, but which can be traced far backwards; exteriorly they possess an annular chitinous thickening (fig. 9); at the anterior end there lies beneath the cuticle an oval ring which is provided in front and behind with a prolongation (fig. 8) and on the right and left of it with two hooks on each side which are directed frontwards and outwards and the points of which project freely: their length is 0.15 mm. The intestinal canal opens at the posterior end; the vaginal aperture is situated closely in front of the anus; the vagina is 1.1 mm, long and 0.044 mm. wide, whilst the width of the uterus, the numerous convolutions of which fill the body-cavity, amounts to 0.16 mm.; the eggs possess a thick hyaline envelop (fig. 10); their length amounts to 0.052 mm. on an average, their width to 0.044 mm., the yolk attaining a length of 0.026 mm. and a width of 0.016 mm. We owe to A. E. Shipley an admirable account of the Linguatulidæ. "An attempt to revise the family Linguatulide," in Arch. de Parasitologie, vol. I. Paris, 1888, pp. 52-86.

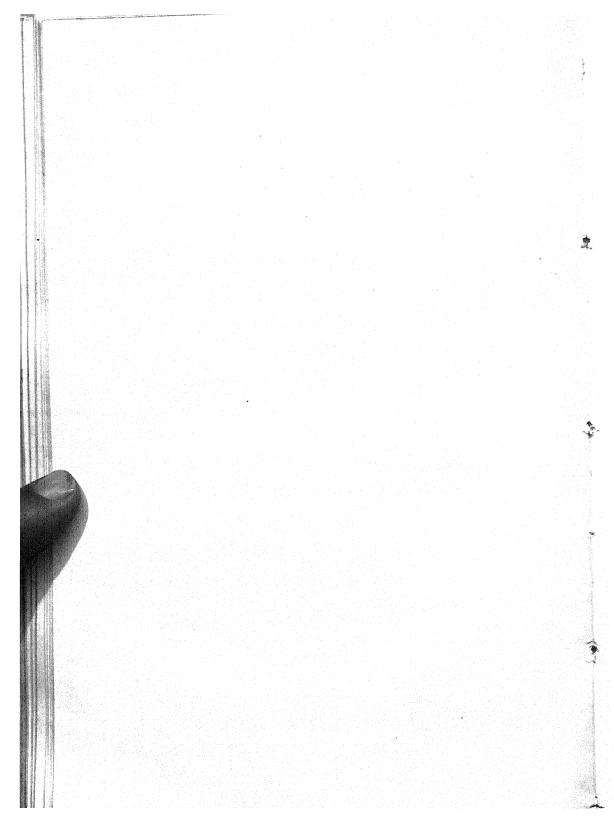
#### EXPLANATION OF PLATE.

(s lateral line, m muscular system.)

Fig. 1-2.—Micropleura vivipara: 1, caudal end of male; 2 cross-section of lateral line.

Fig. 3-5.—Typhlophoros lamellaris: 3, anterior end; 4, caudal end of male, right side; 5, cross-section through lateral line.

Fig. 6-10.—Porocephalus indicus: 6, older specimen, and 7, younger specimen, natural size; 8, anterior end, ventral surface; 9, cuticular prolongation; 10, egg.



34. On some Freshwater Entomostraca in the collection of the Indian Museum, Calcutta—By ROBERT GURNEY. Communicated by N. Annandale. (With 2 plates.)

The Entomostraca here dealt with were kindly entrusted to me for examination by Dr. Nelson Annandale, Deputy Superintendent of the Indian Museum. They comprise a number of Phyllopoda, Cladocera and Copepoda, and one Ostracod, some collected by Dr. Annandale himself, and others forming part of the Museum collection.

Our knowledge of the Entomostraca of India is most meagre; apart from the Phyllopoda, of which several have been recorded by Baird and Sars, we know practically nothing, and it is impossible at present to make useful comparisons with the fauna of other countries. Though I am able to add 14 species to the Indian fauna, the list is obviously too incomplete to be of use to students of Geographical Distribution. The only point of importance which arises from the study of these collections is the completely Palæarctic character of the species contained in the three collections from Chitral and Sind. The Chitral district belongs clearly to the Palæarctic Region, but Sind is generally included in the limits of the Oriental Region, though no doubt having the characters of a border-land. I cannot, of course, lay much stress on the evidence of the single species—Branchipus pisciformis, Schaeff., which I record from there, but the genus, as at present restricted, has not been found hitherto outside the Palæarctic Region.

#### PHYLLOPODA.

1. LIMNETIS BRACHYURA (O. F. Müller).

Several specimens, mostly females, from Shandur lake, Chitral; 12,000 feet (Chitral Mission).

2. ESTHERIA DAVIDI, Simon.

See G. O. Sars, Ann. Mus. St. Petersb., VI, 1901.

This species was first recorded by E. Simon (1886) from Peking. It has since been redescribed by Prof. Sars from specimens brought from the Western slopes of the Chingan Mountains in Eastern Mongolia. Several specimens, agreeing completely with the description given by Sars, were collected by Capt. R. E. Lloyd, I.M.S., at Gyantse in Thibet. The species has not hitherto been found outside Asia.

# 3. ESTHERIA INDICA, n. sp.

Description-

The shell is of the same shape and appearance in both sexes. Seen laterally (Fig. 2) it is elliptical in shape, the height about two-thirds of the length; the umbones very prominent,

situated near the anterior extremity. The dorsal margin is short and straight and ends posteriorly in a sharp angle: the anterior, ventral and posterior margins form an even curve. Seen dorsally, the shell is narrow, the greatest width in front, on a level with the umbones. The valves are thin and rather transparent, marked with about 20 very distinct lines of growth, the marginal lines closely crowded. The spaces between the lines are very faintly punctate and traversed by what appear to be canals, ending distally in little refringent protuberances (Fig. 2a.) protuberances are more marked along the peripheral lines and give these lines of growth a distinct beaded appearance, the canals at the same time giving an appearance of radial striation. The margin of the shell is beset with short hairs, as are also the last few lines of growth posteriorly. In all the specimens these hairs are largely broken off, so that their distribution is not easy to determine accurately.

The head is separated from the body by a deep sulcus (Fig. 1); the rostrum is narrow and minutely emarginate at the extremity

(Fig. 3). The eyes are not quite confluent.

The first pair of antennæ have about 15 rather irregular lobes (Fig. 8). The second pair of antennæ (Fig. 5) have all joints in the anterior branch and 12 in the posterior. There are 20 pairs of branchial legs, the posterior pairs exceedingly minute (Fig. 4). The sensory appendage of the fifth endite is nearly as long as the sixth endite in the female (Figs. 9 and 10), but it is two-jointed, and considerably longer than the sixth endite in the male. The prehensile appendages of the male are of the usual form (Figs. 7 and 8).

The dorsal edge of the tail is armed with a series of short spines regularly diminishing in size from in front backwards (Fig. 4). The fifth segment of the body is produced dorsally into a small elevation bearing a seta; the sixth and following segments are all similarly produced, but the elevation, becomes broader and bears more spines, finally dying away in the last seven segments and leaving each segment armed dorsally with a short strong spine and

one or two accessory spinules.

#### Size of Shell.

Length.

Height.

Male: 3.0—3.25 mm. Female: 3.25—3.75 mm. 1.85—2.0 mm. 2.0—2.25 mm.

Locality-

Mandapam, Pamben Passage, South India.

Collected by Dr. Annandale in a small rain-pool in sand, devoid of vegetation. The pool had been filled a week before by a shower of rain.

The species differs considerably from any of the species of Estheria hitherto described from India. In the outline of the shell it has some resemblance to Estheria boysi, Baird, but the

size, sculpture and number of lines of growth are very different. The only species from which there can be any difficulty in separating it, is Estheria mexicana, Claus. It may be distinguished by the rather more prominent umbones, sharper posterior dorsal angle of the shell, and smaller number of joints in the second pair of antenne. The sculpture of the shell of Estheria indica resembles very closely that of Estheria mexicana as figured by Packard (1883, Pl. xxiv, Fig. 6).

## 4. CYCLESTHERIA HISLOPI (Baird).

(See Sars, 1887.)

One specimen of this remarkable species was taken by Dr. Annandale in a small tank at Calcutta about half an acre in extent and containing a good deal of vegetation. First recorded by Baird in 1859 from Nagpur, it has since been found in Ceylon, Celebes, Sumatra, Australia (Queensland and Victoria), East Africa, and Brazil. It is the sole representative of what is probably a very primitive genus, and in its structure, life-history and distribution it is perhaps the most interesting of all Phyllopods.

### 5. Branchinecta orientalis, Sars.

The collection contains three specimens of this species taken by Capt. R. E. Lloyd, I.M.S., at Gyantse, Thibet. The specimens described by Prof. Sars (1901) were found in Lake Chunta-nor, Eastern Mongolia. The Thibetan specimens agree fully with the description given by Prof. Sars, with the exception that the furcal branches are relatively a little longer.

## 6. BRANCHIPUS PISCIFORMIS, Schaeffer.

Syn. B. ledoulxi, Barrois, 1892.

A number of specimens of this species contained in the collection are labelled "J. A. W. Murray, Sind." They differ slightly from the type in having a few chitinous hooks on the tip of the penis of the male; and in having the tooth on the inferior antennæ somewhat more prominent. In these respects they approach Branchipus ledoulxi, Barrois, and are in fact a link between the latter and Branchipus pisciformis, Schaeff. I regard B. ledoulxi, for this reason, as not sufficiently distinct to rank as a separate species. Hitherto the species has only been recorded from parts of Europe, Algeria and Syria, so that the present record is a considerable extension of its range to the eastward.

## 7. STREPTOCEPHALUS DICHOTOMUS (Baird).

Syn. S. bengalensis, Alcock, 1896, and Chirocephalus stoliczkæ, Wood-Mason MSS. See Sars, 1900.

I have had the opportunity of examining the types of Streptocephalus bengalensis, Alcock, consisting of one male and one female-

specimen, and I think there can be no doubt that they should be referred to Baird's species, S. dichotomus, as it has been redescribed by Prof. Sars (1900). I cannot detect any important difference between the species. There are also some rather dilapidated specimens in the collection labelled "Chirocephalus stoliczkæ Wood-Mason (Cutch)," 1 and these are also in reality Streptocephalus dichotomus. They do, however, differ rather markedly from the type, and I think it is perhaps advisable to consider them as constituting a variety to which the name Streptocephalus dichotomus, var. simplex may be given. The variety differs from the type in the following respects. In the second antenna of the male the ventral apophysis is very long and straight (Fig. 11); there are only three sickle-shaped filaments on the basal part of the second joint; the anterior terminal branch is simple and undivided, armed along the greater part of its length with regularly placed recurved The accessory branch of the second joint agrees with the type. The penis, in its everted condition, is extremely long, reaching to the end of the fourth segment of the abdomen and armed with two rows of small spines. In two of the three specimens the penis is retracted, and has the form of a simple stout curved process.

The female I have not seen.

## CLADOCERA.

8. DAPHNIA FUSCA, n. sp.

Description of female-

Shell elongated oval in shape, bluntly pointed behind in the middle line, but without a spine in the adult condition (Fig. 12). The young are provided with a long toothed spine, sometimes amounting to one-third of the total length, but the spine appears to shorten and disappear with age. The edges of the valves are quite smooth, but their surface is marked with oblique lines intersecting to form rhombic areas. The dorsal part of the head is reticulated in the same way, but over the eyes the cuticle is finely striated. The head is comparatively small, about one-fifth of the total length, without any crest, and is separated from the body by a very slight depression. The front is nearly straight; the rostrum long, deflexed and obtusely pointed. The fornix is rather prominent and continued over the eye. It is also prolonged slightly over the anterior part of the valves as an incipient secondary fornix. The eye is large, with the crystalline cones almost embedded in pigment. The first pair of antennæ are large, and project considerably from the posterior margin of the head. The second pair are large and strong, the basal portion very minutely scaly along its anterior edge. The natatory setæ are about as long as the rami and do not reach to the posterior end of the body. The postabdomen has

I [I have inserted the locality, of which Mr. Gurney was unaware, from records in the Museum.—N. Annandale.]

the dorsal edge slightly sinuate, bearing about 17 short teeth, the anterior 5 or 6 decreasing in size (Fig. 13). The terminal claws are rather long with a basal comb and a row of fine cilia (Fig. 14). There is an accessory comb composed of 7 or 8 teeth on the postabdomen itself just at the base of the claws. Of the dorsal processes of the abdomen, the anterior one is about twice as long as the next one, and clothed with cilia.

The animal is of a deep reddish-brown along the back, shading

off to a faint tinge ventrally.

Length: 2.75-3.3 mm.

Locality-

Kang Kul (Chitral Mission).

This Dapnia is evidently closely allied to Dapnia atkinsoni, Baird, but, so far as the specimens which I have examined go, it is sufficiently distinct. In view of the great local and seasonal variability of the Daphnias, the making of new species has become a rather speculative proceeding and it is unfortunate that in this case I have not had the male and ephippial female for comparison; but, on the evidence available, I think I have no course open to me but to describe the species as new.

# 9. Simosa elizabethae (King).1

See Sars, 1888.

This species, which differs very slightly from S. vetuloides, Sars, is a widely-distributed one, being recorded from Australia, Ceylon, Sumatra, Java, Siam and China. The specimens which I have examined were taken by Dr. Annandale in Kyd Street Tank in Calcutta, on April 5, 1905, and Jan. 21, 1906. It was abundant on the first occasion, but rare on the second.

## 10. CERIODAPHNIA RIGAUDI, Richard, 1894.

Dr. Annandale has sent me specimens of this species taken in his aquarium in Calcutta, and I found several specimens in a collection made in a brackish pool at Port Canning near Calcutta. In the latter collection they were associated with various typical marine Copepods, Amphipods and Caridea. This species has a wide distribution, being found in Palestine, Indo-China, Sumatra, New Guinea, South Africa and Brazil.

## 11. Scapholeberis kingi, Sars, 1903.

Found abundant in Kyd Street Tank, Calcutta on Jan. 21, 1906. In the majority of specimens the sculpture of the shell is by no means as well marked as Prof. Sars describes it as being; in fact in some specimens the striation of the shell is not easy

<sup>&</sup>lt;sup>1</sup> For the name Simosa in place of Simocephalus, Schödler, see Norman, 1903.

to see in a lateral view. Viewed from the dorsal side, on the other hand, the transverse ridges are sometimes very prominent. Except for its small size, Scapholeberis kingi appears to me to be inseparable specifically from S. mucronata (O. F. Müller), though it should probably rank as a variety of that species. I have carefully examined the setæ of the flattened ventral margin of the shell and find that they agree in almost all respects with the account given of them for S. mucronata by Mr. Scourfield (1894). The setæ of the outer of the two rows are about 26 in number. Of these the first 6 are inserted very close together on a line curving inwards towards the edge of the shell. Each seta is tubular, with a short basal branch and dividing distally into two larger branches. One branch is directed backwards while the other is a continuation of the seta forwards and inwards so that it has a semicircular curve. Along the outer edge of the two distal branches spring several exceedingly delicate hairs, but I cannot see that they have the tuft-like arrangement described by Mr. Scourfield. The 7th and 8th setæ are like the first 6 though placed a little wider apart, and differing in having no basal branch. On the other hand a minute hair springs from the shell near their bases and is probably the equivalent of this basal branch. The eighth seta has delicate hairs along both its outer and its posterior sides, and the seta at its base also has them on its posterior side. As in S. mucronata, there is a line of excessively faint radial markings running round beyond the ends of the anterior setæ, and, as it were, enclosing them. Mr. Scourfield believed these markings to indicate "a number of imbricated hyaline scales supported by the setæ" (1894, p. 8). He considered it possible that the hairs arising from the setæ are really stiffening corrugations in the hyaline scales. From the presence of these "hairs" on the posterior edge of the eighth seta only, I think myself that in these anterior setæ there are no separate scales, but that there is one lamella the anterior series of (in this case) 8 setæ. The setæ following this series probably support each a separate, but overlapping, scale. The next 4 (9-12) are all two-branched; but from the 13th to the 24th they are all simple, though bearing a few "hairs." The 24th, 25th and 26th are much longer, and the 25th has a short basal branch bearing a tuft of "hairs."

Mr. Scourfield informs me that in a West Australian species probably identical with S. microcephala, Lillj., the arrangement of these setæ differs considerably from those of S. mucronata, and I have shown (1903) that in S. aurita, Fischer, the modified setæ are wholly absent. It is probable, therefore, that these setæ will be found to afford a reliable basis for discrimination of species, and, if this is so, then the species with which we are now dealing

cannot be separated from S. mucronata (O. F. Müller).

12. CHYDORUS SPHERICUS (O. F. Müller).

Kang Kul—Chitral Mission.
A species of world-wide distribution.

Vol. II, No. 7.] On some Freshwater Entomostraca. [N.S.]

#### COPEPODA.

### 13. CYCLOPS STRENUUS, Fischer.

Several specimens, mostly immature, were associated with Daphnia fusca in the Kang Kul collection.

Cyclops strenuus is a typically Northern species, which has not, so far as I know, been found South of Palestine.

### 14. Cyclops viridis (Jurine).

One or two specimens were found in the Kang Kul collection. It appears to be confined to Europe, North Asia and North America.

### 15. CYCLOPS LEUCKARTI, Claus.

Taken by Dr. Annandale in the Kyd Street Tank, and in a brackish pool at Port Canning near Calcutta.

Distribution: world-wide.

## 16. CYCLOPS PRASINUS, Fischer.

Taken in the Kyd Street Tank, Calcutta. Recorded from all parts of the world.

## 17. CYCLOPS PHALERATUS, Koch.

Kyd Street Tank, Calcutta.

Distribution: Ceylon, Australia, New Guinea and South America.

## 18. DIAPTOMUS BACILLIFER, Koelbel.

Kang Kul-Chitral Mission.

A species characteristic of Northern and high mountainous regions.

#### OSTRACODA.

## 19. STENOCYPRIS MALCOLMSONI (Brady).

A number of specimens were sent me by Dr. Annandale from his aquarium in Calcutta. It has been recorded from Central India, Ceylon, Queensland and East Africa.

[Both this year and last this Ostracod has become exceedingly abundant in aquaria at the beginning of the hot weather. In winter it disapppears. Its appearance has coincided roughly on both occasions with that of the Protozoon Opercularia nutans.—N. Annandale.]

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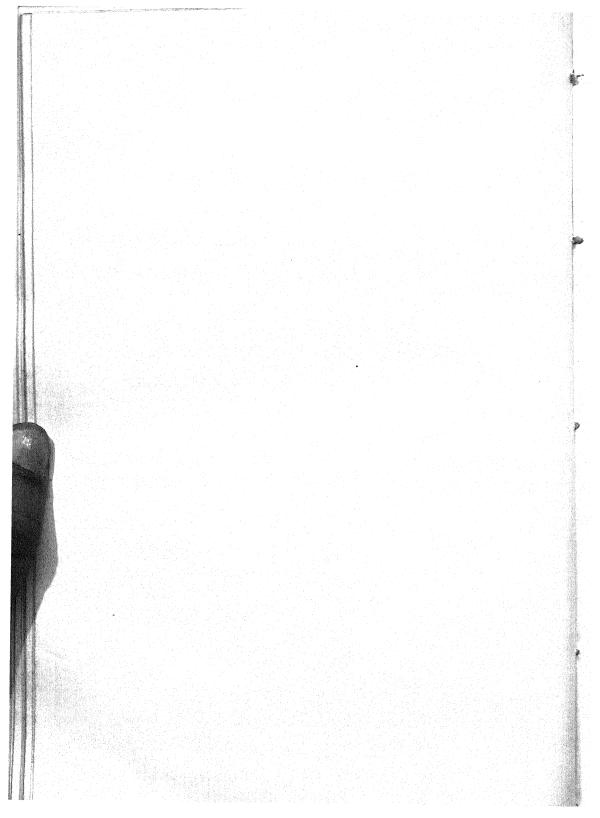
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#### DESCRIPTION OF THE PLATES.

### (Plates 4 and 5.)

Fig.	1.	Estheria indica,	n. sp. Side view of male.	$\times$ 26.
	-2.	••	Left shell of male.	$\times$ 20.
	2a.	35	Part of the posterior region	of the shell
			along 14th and 15th lines	
**	3.	**	Head of female from dorsal s	side. $\times 37$ .
,,	4.	,,,	Posterior part of body of fen	nale. $\times 37$ .
,,	5.	**	Second antenna of female.	
••	6.	,,	Part of first leg of male.	$\times$ 57.
• • • • • • • • • • • • • • • • • • • •	7.	• • • • • • • • • • • • • • • • • • •	Part of second leg of male.	
	8.		First antenna of male.	
25	9.	99	Leg of 10th pair, female.	× 45
99	10.		5th endite of leg of 11th pai	
""		"		× 150
	11	Strentocenhalus	dichotomus, Baird var., simple	
,,,		St. procepitions	male from side.	x 8.
	12.	Damhaia fusca	n.sp. Side view of female.	
**	13.		Postabdomen.	
,,	14.		Terminal claw of postabdom	
"	15.	Scapholeberis ki	ngi, Sars. 7th and 8th setæ o	f outer row
		•	on anterior edge of shell. x	about 1000.
			9	



35. Some Street Cries collected in Persia.—By Lieut. Col. D. C. Phillott, Secretary to the Board of Examiners.

Persia is the very home of figurative language, and striking examples are to be found even in the cries of street-vendors. The following were collected in Kirmān:—

The vendors of kerosine oil cry Naft-ī dāram miṣl-i-gulāb, "A Kerosine oil. naptha have I like rose-water"; while the sellers of castor oil Castor oil. (for burning) say, "Yā shāh-i chirāgh! Yā shāh-i chirāgh," "Oh king of lamps! "Oh king of lamps!"

Fruits and sweets are sold to a cry of Quvvat-i  $b\bar{a}z\bar{u}$ , quvvat-i Fruits:  $p\bar{a}$ , "Strength to your arms, strength to your legs." sweets.

For figs alone, there is a somewhat similar cry, Quvvat-i Figs. zānū anjīr ast, "Strength to the knees are figs." 'Strength to the knees' perhaps means no more than 'light refreshment,' for a guest is sometimes invited to stay and eat by the polite but colloquial phrase, "Yak chīz-ī bi-khur ki quvvat-i zānū paidā kunī, "Eat just a little to give strength to your knees." The idea seems to be that the refreshment will give the guest the necessary strength to continue his journey. Another cry for figs is Anjīr! anjīr! bulbul-i bāgh: Bihisht, "Figs! figs! nightingales of the Garden of Paradise."

For pomegranates there seem to be many cries: Anār dāram, Pomegra-anār-i bāgh-i Bihisht, "Pomegranates have I, pomegranates of the nates. Garden of Paradise;" Nār,² bāb-i dil-i bīmār, "Pomegranates fit for the sick." A fine and esteemed variety of pomegranates called atābakī is vended to the cry of "Atābakī dāram nār, atābakī dāram nār."

For grapes, <u>Tilā dāram mushtarī</u>, "Gold have I, oh buyer!" **Grapes**. For cucumbers, *Ay qand-i tar <u>kh</u>iyār*, <sup>8</sup> "Oh liquid sugar, **Cucumbers**. cucumbers!"

The chant for mulberries is, "Bīdāna nabāt; bīdāna āb-i hayāt; Mulberries. bīdāna shakar nabāt; bīdāna; bi-yā, lazzat mī-barī az rūh, "Seedless mulberries, sweet as candy 3; seedless mulberries, like the water of life; seedless mulberries, like sugar and candy; mulberries; oh come! thou wilt delight thy soul." Black mulberries are also sold to Mīva-yi ṣafrā-bur, shāh-mīva, "Bile-removing fruit, the king of fruits!" and white mulberries to Nugl-i hil-a (i.e., hil ast) "Sugared cardamoms are here."

For plums a cry is  $\bar{A}y$  safr $\bar{a}$ -shikan  $\bar{a}l\bar{u}$ , Oh plums, a cure Plums. for bile!"

For halvā of dates, Āy halvā-yi kharak.4

Halvā.

4 Kharak is a dried date.

<sup>1</sup> i.e., Heaven; not the Garden of Eden.

 $<sup>^2</sup>$  Nar, corrup of anar; pomegranates are often prescribed by hakims.  $^3$  Qand is loaf sugar, much esteemed by modern Persians, by whom all other sugars are rather despised. Some Persians, however, consider loaf sugar unclean (najis) partly because it is said to be clarified by bones. Nabāt or sugarcandy has not these objections. There are also a few old-fashioned Persians who will not take tea, etc., if it has been purchased from a Hindu.

Sweets. Pistachio nuts.

For sweets, Ay pashmak, ay halvā-yi ārda.

Dāmghān (pronounced Damghūn) and Simnār near Mash-had are noted for their pistachio nuts, so Pista-yi Damghun, mushtari, "Pista nuts from Damghun, oh buyer" is a natural cry. A general cry for nuts, melon and pumpkin seeds and other edible seeds that are eaten parched and salted is, Hama 'ajil daram u bi-shikan.2

Rams

At the 'Id-i Qurbān rams are usually sacrificed, rarely camels, and never kine as in India. It is a common belief that, on the Day of Resurrection, the sacrificer will ride from the Judgment Plain into Heaven on the very animal he sacrifices at this festival. Hence rams are sold to the cry of  $Sh\bar{a}\underline{kh}$ -ash bi- $g\bar{\imath}r$   $sav\bar{a}r$  shau, "Hold it by the horns and ride it."

Other common cries are:-

Tripe.

Āy sīrā'ū, "Oh tripe!"

Water.

Bi-nūsh bi-yād-i shahīd-i Karbalā, "Drink in memory of the martyr of Karbaia."4

Tea and Cinnamon Tea.

Ay chāhī! dār-chīn nabāt! "Oh tea! and sweet cinnamon

Cloths (hawked in villages only).

Ay qamīs dāram, pārcha dāram, shīla dāram, "Oh longcloth have I, cloths have I, sālū b have I!"

Pins and needles (usually hawked by Jews).

Ay sūzan u sanjāq; angushtāna, yarāq! "Oh needles and pins; thimbles, and gold and silver lace!"

Scissors and embroidery (in villages only).

Ay migrāz, āy yarāg-i dam-i chādar, "Oh scissors! Oh gold and silver lace for trimming chādars!6

Antimony.

Ay surma-yi sang, ay surma-yi sang, "Oh antimony stone!? Oh antimony stone!"

In India this sweet is called ilāchī-dāna.

8 The Shi'ahs always sacrifice uninjured males: a gelding or an animalwith a defective horn or a cut ear would be rejected. Sunnis sacrifice all three sexes.

<sup>1</sup> Pashmak is a white sweetmeat like hair or jute fibre. Ḥalvā-yi ārda is made of sesame seed, sugar, flour, and butter. These two sweets are always sold together.

<sup>&</sup>lt;sup>2</sup> Ājīl P, and 'ajīl A. is a term applied to nuts, almonds and edible seeds: it was first used for gazak-i sharab, 'anything eaten with wine.' Bi-shikan Impera. "break," is here an adjective or substantive.

<sup>4</sup> i.e., Husain, slain at Kerbela. He was wounded in the mouth by an arrow when he stooped to drink in the Euphrates.

<sup>5</sup> Shila is vulgar for shalla.

<sup>5</sup> The Zardushti women wear a special chādar without yarāq.
7 Surma-yi javāhir is a valuable collyrium supposed to be compounded of jewels.

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 $\lceil N.S. \rceil$ 

Au davā-yi mihr u muhabbat,1 "Oh medicine for love and Love Philtres. affection."

Ay pūl-i buz! āy pūl-i buz,2 "Oh money for goats! Oh Live goats. money for goats!"

Āy barra-yi parvār! āy barra-yi parvār, "Oh fatted lambs! Small lamb Oh fatted lambs!"

 $\bar{A}y \ g\bar{a}b$ - $i \ k\bar{a}r\bar{i}$ , "Oh ploughing bulls."

(for the ploug

Āy gāb-i shīrī! āy gāb-i shīrī, āy gāb-i shīrī, "Oh milch cows! oh milch cows!"

Āy khurūs-i Lārī, "Oh cocks of Lār." 3

Cocks.

Ay murgh-i tukhmī, "Oh laying hens!"

Hens.

Āy jūja! āy jūja, "Oh chickens! Oh chickens!" Āy bulbul i khwānanda, āy bulbul-i pur chahcha b "Oh sing- Nightingal

Chickens.

ing bulbuls! Oh nightingales in full song!"

Āy hadīya-yi Qur'ān, "Oh presents of Qur'ān!" To sell a Qur'āns. Qur'an is impious; hence it is offered as a present, the receiver giving a present of money in return. When a vendor of Qur'ans cries his "presents," the following little comedy is enacted: The purchaser, probably a woman, will enquire, In Qur'ān chand hadiya mi-khwāhad, "How many presents for this Qur'an?" The reply will be, Bi-rizāmandī-yi Khudā, "As God wills." The woman then reverently lifts the volume, kisses it and produces some security, telling the "giver" to call again. She next consults a mullā who perhaps says, "Panj tūmān hadīya dārad, "The present you should give is five tumans." The "giver" calls for his "present," and, if dissatisfied, he will say, Bi-panj tūmān hadīya namī-diham, "I won't make you a present of it for five  $t\bar{u}m\bar{a}ns$ .

Jews 6 that buy old clothes, broken or discarded articles, cry Old clothes Ana muna ho? (i.e., kuhna muhna hast?) "Any old rubbish?"

A modern cry in Tehran is the "Visk, Visk!" of the shoe-Shoe-black

blacks-at least so Persians inform me. The origin of the cry is doubtful.

For the street cries of Cairo, vide Lane's "Modern Egyptians," Chap. XIV.

2 Buz is properly the female: the he-goat is chapish or narī.

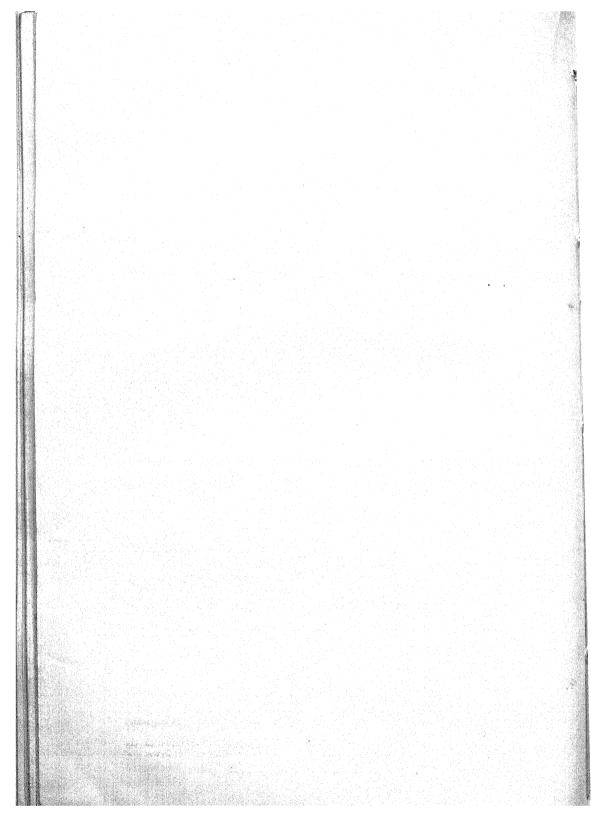
<sup>1</sup> Persian form of mahabbat.

<sup>3</sup> Lar is famous for its large breed of poultry. Poultry are always purchased alive.

<sup>4</sup> Jūja modern for obsolete chūza: the latter is still in use in India and Afghanistan.

<sup>5</sup> Chahcha is the spring song when the bulbul is in love, as opposed to rīza-kh wānī a bird-fancier's term for the low warbling before the cage-bird comes into full song.

<sup>6</sup> Such Jews when hailed are styled Mulla or Khwaja. In Calcutta the purchasers of old articles are called bikri-wāla and are Hindus, not Jews.



36. A new Gecko from the Eastern Himalayas.—By N. Annandale, D.Sc., C.M.Z.S.

Less is known of the herpetology of the Himalayas than is generally realized, and the discovery of a new form even in so well explored a locality as the Darjiling district is not surprising, although far more collecting of Reptiles has been done in this part than in most parts of the range. The new species is represented by a single specimen recently taken by myself in a European house a-Kurseong (5,000 ft.). It is a typical member of the genus Gymno dactylus, of which two species (both extremely rare) have hitherto been recorded from the Himalayas, viz., G. fasciolatus from Simla, and G. lawderanus from Kumaon. G. himalayicus, as I propose to name the Darjiling form, belongs to a group in the genus which also includes G. khasiensis from the Khasi Hills and Upper Burma, G. marmoratus from the Malay Peninsula, Sumatra, etc., and G. rubidus from the Andamans. On the whole it seems to be more closely related to the Malayan species than to either of its other allies.

### GYMNODACTYLUS HIMALAYICUS, Sp. nov.

## Diagnosis-

Head large, rather narrow, depressed, ovoid; snout slightly longer than orbit, obtusely pointed; forehead concave. Habit slender; digits compressed throughout; tail slightly longer than head and body, rounded, tapering. Dorsal surface of head and body granular, with numerous small conical tubercles on the body, base of head and hind limbs; on the back these tubercles tend to be arranged in 16 irregular lines: they are very much smaller than the ear-opening. Ventral scales, small, leaf-shaped, imbricate; about 35 across middle of belly. No lateral fold or enlarged scales in its place. Rostral grooved; nostril between rostral, first labial and several small scales; ten upper and ten lower labials. Ear-opening ovoid, slanting, one-third as large as eye. Subdigital lamellæ moderate, larger on proximal than on distal joints. Eleven præanal pores arranged in a continuous, wide, V-shaped series; the scales posterior to them, between the arms of the V, enlarged; three postanal papillæ (in the male) on either side; base of tail swollen below; no pubic groove; no femoral pores. Coloration as in G. marmoratus.

## Dimensions of adult male-

Total length	111 mm
Head and body	53 ,,
Tail	58 ,,
Hind limb	25 ,,
Fore limb	20 ,,
Breadth of head	9 ,,

This species is very closely allied to G. marmoratus, with Malayan specimens of which I have compared the type. It may be distinguished by its smaller size (if this is constant), more slender habit, narrower head, and larger ear-opening, by the fact that the basal joints of the digits are more strongly compressed, and especially by the number and arrangement of its pubic pores. From G. khasiensis the absence of a lateral fold will at once distinguish it, as its small, conical dorsal tubercles will from G. law-deranus.

I take this opportunity to put on record the occurrence of Japalura yunnanensis, Anderson, in Indian territory, having found in the Museum a fine male taken some years ago at Buxa, near the Bhutan frontier of Bengal, by a collector.

37. Notes on the Freshwater Fauna of India. No. VIII.—Some Himalayan Tadpoles.—By N. Annandale, D.Sc., C.M.Z.S.

During a recent visit to Kurseong, which is situated at a height of 5,000 feet in the Darjiling district, I was so fortunate as to obtain the tadpoles of two of the characteristic Anura of the Eastern Himalayas, of a species hitherto not recorded from the Indian Empire, and of an unidentified form of interesting structure. My visit lasted from May 21st to May 29th, and it would seem probable that the species found had spawned about the

beginning of the hot weather.

The structural adaptations exhibited by tadpoles which live in the small mountain torrents of the Himalayas, are identical with those of species occurring in similar situations in the Malayan hills, but remarkably divergent inter se. It so happens that the three-species which I found living together in such streamlets at Kurseong, illustrate three different methods by which these tadpoles are protected against the incidence of sudden floods. It is noteworthy that within the genus Rana a variety of larval types occur; but, as I hope to show in the present communication, the peculiarities which are so striking in certain tadpoles, have homologies in other species which cannot be detected except during life. The first tadpole I describe is not peculiar in any way, but it occurs in circumstances which apparently do not call for any structural modification.

#### DESCRIPTION OF TADPOLES.

### 1. Bufo Himalayanus, Günther

Maximum total length, 27 mm.; greatest depth of tail between  $\frac{1}{5}$  and  $\frac{1}{6}$  of maximum total length, less than twice the depth of the caudal muscles; length of tail  $1\frac{1}{4}$  that of head and body. Head flat; nostril slightly nearer the eye than the snout; eye dorsal, small, by no means prominent; spiracle sinistral; pointing backwards and upwards, very inconspicuous. Tail obtusely pointed, constricted at the base. Vent in middle line. Colour almost uniform inky black, slightly less intense on the ventral than on the dorsal surface. Dental formula  $\frac{1}{3}$ . Beak in two parts, an upper and a lower; both serrated at the free edge. Lips fringed at the corners, but not on the posterior or anterior edge.

As regards the structure of the mouth, this tadpole closely resembles that of Bufo melanostictus, from which it may be readily

distinguished by its small, sunken eye and flat head.

<sup>1</sup> See S. Flower in *Proc. Zool. Soc.*, 1896, p. 911, pl. xliv, fig. 3, and 1899, p. 911. Günther regarded *B. himalayanus* as no more than a variety of this species.

### 2. MEGALOPHRYS MONTANA, Kuhl

M. montana; Boulenger, in Annandale and Robinson, Fasciculi Malayenses, Zool. i, p. 132; Annandale, ibid., p. 275; Weber in Ann. du Jard. Bot. Buitenzorg, Suppl. ii, 1898, p. 5.

The peculiar float surrounding the mouth of this tadpole has been described in detail by Prof. Max Weber and by myself. The examples from Kurseong agree very closely with those from Malaya and Java. I was at first inclined to suspect that the Indian specimens might be larvæ of Leptobrachium monticola and that the larvæ of this form very closely resembled those of Megalophrys montana, the genus of the latter not having been recorded from Indian territory; but in many of my specimens the hind legs are well developed and show no trace of a web at the base of the toes. In one specimen the fore legs are also well developed, and the funnel has disappeared except for a ridge along the lower lip and a tubercle at each corner of the mouth; but the tail has hardly begun to be absorbed. The funnel has already become much reduced in size in individuals in which the fore legs are almost ready to burst through the skin. The oldest specimen agrees, so far as it is possible to say, with Boulenger's var. aceras.

## 3. RANA LIEBIGII, Günther

Maximum total length, 56 mm.; tail thrice as long as head and body, its greatest depth  $\frac{1}{5}$  of the maximum total length, twice the depth of the caudal muscles. Head feebly arched, nostril midway between the eye and the snout; eye small, by no means prominent, near the dorsal surface; spiracle sinistral, pointing backwards and slightly upwards, small, surrounded by a white ring. Tail pointed gradually at the tip, not contracted at the base; vent on the right side. Colour variable; dorsal surface brownish, marbled in some cases with yellow; fin membrane pale, with large, dark pigment cells, which in some specimens tend to be arranged in vertical bars; in some specimens a dull yellow, mid-dorsal streak at the base of the tail. Dental formula  $\frac{5}{1}$ . Lips very large, enclosing a considerable cavity; the lower lip with a complete double fringe; a single fringe at the base of the upper lip on either side; the beak in two parts, an upper and a lower, neither servated.

## 4. RANA, sp.

Length of a specimen without legs, 26 mm.; tail more than twice as long as head and body, its greatest depth  $\frac{1}{6}$  of the total length and twice the depth of the caudal muscles. Head flat; nostril much nearer the eye than the snout; spiracle sinistral, pointing upwards and backwards; a considerable glandular patch on either side behind the eye, which is on the dorsal surface. Tail gradually pointed at the tip; the lower fin disappearing some little distance behind the vent, which is in the middle line. Dorsal surface uniform

pale grey; ventral surface dirty white. Dental formula  $\frac{4}{1}\frac{4}{1}$ . Lower lip fringed; a large sucker on the belly immediately behind the mouth. Beak in two parts, an upper and a lower; neither serrated.

This form resembles the tadpole of Rana latopalmata <sup>1</sup> (which also occurs in the Darjiling district) but differs from it in its dental formula, fringed lower lip, and uniform coloration.

#### HABITS OF THE TADPOLES.

The tadpoles of *Bufo himaluyanus* were found in large numbers at Kurseong and at Darjiling (7,000 feet) in small artificial ponds, and at the former locality in a large and comparatively still pool of a stream. At Kurseong young toads, in which the tail had partly or completely disappeared, were common, while at Darjiling most of the tadpoles were still devoid of external fore limbs. The young toads were considerably bigger than are those of *B. melanostictus* at the same stage.

The other three forms recorded above were taken in small mountain torrents, the largest pools of which in many cases did not contain more than a few cubic feet of water at the time they were examined. The tadpoles of Rana liebigii were also found

in a larger pool, together with those of Bufo himalayanus.

Although these three forms are adapted for clinging to rocks during a flood, the manner in which they are able to do so is not the same in all cases. The larva of Rana liebigii adheres chiefly by means of its mouth, the enlarged lips of which, as in the tadpoles of several other species, form a powerful sucker, while that of the Rana I have left unidentified clings chiefly by means of an additional sucker. In the former species, however, the belly as well as the mouth is applied to the surface to which the tadpole is clinging, in such a way that an individual adhering to the side of a glass vessel can be seen to have on its ventral surface a large, circular, flattened area, which only needs a raised edge to make it into a true sucker. Moreover, in the unidentified species the margin of the fringed lower lip forms the anterior wall of the ventral sucker.

The method in which the tadpole of *R. liebigii* adheres to rocks and even climbs upon them, closely resembles that of a small Loach (? *Nemachilus* sp.), found in the same streams; but the Fish is able to progress more readily than the tadpole, and not infrequently makes its way up the face of a rock completely out of the water. In both cases the animal has a suctorial mouth and aids itself in clinging to more or less vertical surfaces by applying its belly to them very closely. By means of this application it is able to release the hold of its mouth for brief periods and to wriggle a

<sup>&</sup>lt;sup>1</sup> See Boulenger in *Proc. Zool. Soc.*, 1893, p. 526, pl. xliii, fig. 3; and cf. Laidlaw, ibid., 1900, p. 386, pl. 1vii, figs. 3, 4.

short distance forwards or upwards without ceasing to cling to its support. In the larva of *Rana latopalmata*, however, and of similar forms, the mouth has become, or rather remained, an organ of adhesion of comparatively little power, while a regular sucker has been formed on the belly which has apparently no connection with the smaller sucker found in a somewhat similar position in many

tadpoles at an earlier stage of development.

The tadpole of Megalophrys montana has neither a strongly suctorial mouth nor a large ventral sucker, but it is able to make its way up the sides of stones in a different manner. The funnel surrounding the mouth is probably homologous, to some extent, with the enlarged lips of the larve of such forms as Rana liebigii; but the homology is not complete. As I have shown elsewhere (op. cit.), the horny teeth with which the float or funnel is studded have an entirely different structure from those of other tadpoles, being distinctly multicellular in origin. The functional analogy between this organ and the lips of Rana tadpoles is remote, and the habits of the larvæ differ completely from those of the other tadpoles found in the same environment. The latter frequent the upper surface and sides of submerged stones, under which they hide themselves when alarmed; but the larvæ of M. montana remain, at any rate during the day, in corners at the extreme edge of the same pools, generally among the vegetable débris which collects in such places. Owing to their large and extremely muscular tails they can swim more rapidly than most tadpoles and have much the motion, as they have the appearance, of a small Silurid fish. They are able to insinuate themselves with the greatest agility into small crevices. Should they be forced into the centre of a pool, their funnel immediately expands and they float lightly on the surface; but when they are making their way into narrow cavities it is folded together and the enormous lower lip entirely covers the mouth and the snout, probably protecting these parts from injury. When the tadpole buries itself in the mud, as it does in Malaya when its pools dry up, this is also the case. Not improbably the peculiar horny teeth aid the funnel in this function (although they are not on the exposed surface when it is folded) by giving it additional strength. The lower lip also serves, however, another purpose, which has not previously been noticed. As its posterior surface, because of smoothness and considerable area. is strongly adhesive, the tadpole is able to cling to smooth, vertical objects with its assistance, and at the same time to progress up such surfaces by vigorous movements of the tail. In this way the animal climbs up the sides of stones and probably makes its way from one little pool to another.

Thus in three different species of tadpoles found together in small mountain torrents, three different methods of adhesion have been perfected. The larvæ of Rana liebigii adhere by the ventral surface of both lips, with the aid of the surface of the belly; those of R. latopalmata and another species, by means of a ventral sucker; those of Megalophrys moutana, by means of the posterior sur-

face of the lower lip.

38. Preliminary note on the Chemical Examination of the Milk and Butter-fat of the Indian Buffalo.—By E. R. WATSON, M.A. (Cantab.), B.Sc. (Lond.), Officiating Professor of Chemistry, Engineering College, Sibpur.

The necessity of a careful investigation of these important food-substances need scarcely be emphasised. In all countries, civilised, in the western sense of the word, it is necessary to carefully supervise the food-supply and to see that it is not deleteriously adulterated. As a preliminary it is necessary to very carefully analyse wholesome samples of the various food-stuffs in order to set up standards for future comparison. The figures which have been arrived at in Europe for the composition of the milk and butter-fat of the cow cannot be used as standards in India. not even for the products of the cow, still less for those of the This has been clearly shown by the few analyses which have been published in India up to the present. (Food Adulteration, J. N. Datta, in Trans. First Indian Medical Congress. 1894, p. 275; Composition of Indian Cows' and Buffaloes' Milk, J. W. Leather, in the Agricultural Ledger, No. 19 of 1900, p. 195).

Pappel and Richmond (Trans. Chem. Soc. 57, p. 752) have made an almost exhaustive analysis of the milk and butter-fat of the Egyptian buffalo or gamoose It was natural to suppose that the products of the Indian buffalo might approximate in character and composition to those of the Egyptian animal, and, therefore, constant reference has been made to the results obtained by these

investigators.

Throughout the present work the following questions have been constantly borne in mind: (i) Why is it that buffalo-milk, which is richer in fat than cow-milk, commands a lower price in the market and is less esteemed as an article of food, and is it possible to explain this on chemical grounds; and (ii) is it possible to distinguish by chemical analysis between the milk and butter-fat of the buffalo and the same articles from the cow.

I have not attempted the estimation of the different constituents in the milk, because this is the side of the problem which has already been investigated to some extent. There was one point, however, suggested by a perusal of Richmond and Pappel's paper, which it appeared of the greatest importance to examine. These investigators had found that in the milk of the Egyptian buffalo there is no lactose, but a new sugar to which they gave the name 'tewfikose.' Such an important difference from the milk of the cow might explain the popular belief that the milk of the buffalo is less easily digested than that of the cow. Also it should be noted that the estimations of sugar in milk are generally based on the assumption that the sugar is lactose, and these estimations would need revision if this assumption were incorrect. I have, therefore, isolated a sample of the sugar from buffalo-milk for examination. In crystalline form, taste, optical

rotation, molecular weight and behaviour with Fehling's solution it is identical with *lactose* and different from the 'tewfikose' described

by Richmond and Pappel.

Details of the isolation and examination of sugar-The milk used for this purpose was obtained from a buffalo in the village of Shibpur in May 1906.\* The method adopted for isolation was identical with that employed by Richmond and Pappel (loc. cit.), viz., precipitation of the proteids and fat by mercuric nitrate solution (Wiley's reagent) neutralising the filtrate with aqueous potash and passing sulphuretted hydrogen gas to precipitate mercury salts, filtering and concentrating the filtrate on the water-bath until the sugar crystallised out. It was found necessary to wash with cold water and to recrystallise from water in order to free the sugar from traces of potassium nitrate. The sugar was then dried in a desiccator over calcium chloride at the ordinary temperature. Another sample, which proved to be identical in properties, was isolated by evaporating the milk to dryness, extracting with ether, boiling with absolute alcohol and then extracting the sugar with dilute alcohol. The purification from traces of albuminoids of the sugar obtained in this way was somewhat troublesome.

Optical rotation was determined in aqueous solution:—
10 per cent. boiled solution of the sugar in a 200 mm. tube

gave  $\alpha_{\rm p} = +10^{\circ}30'$ .

 $[a]_n$ 

Found. For lactose in 10 per cent. solution. 52°30′.

Molecular weight was determined by the freezing point method. 0.4670 gms. sugar dissolved in 20 gms. water gave  $\Delta = -0.118$ °C.

M.W. = 366.M.W. of lactose  $C_{12}H_{22}O_{11} + H_2O = 360.$ 

I have obtained the following results in the examination of several samples of butter-fat. Most of these samples I have obtained from the village of Shibpur, personally superintending the operation of milking, and preparing the butter-fat from the milk by allowing the cream to rise and then making into butter by shaking in a bottle. The butter was melted in the steam-oven and the clear fat filtered off. The samples of milk were taken chiefly in January and February, 1906, from animals with calves of different ages.

<sup>\*</sup> I am informed by Mr. Dutt, Professor of Agriculture, Shibpur College, that there are no well-marked breeds of Indian buffalo, and that the names sometimes given merely refer to the localities in which the animals live.

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I intend to confirm the figures given in this note by the examination of a larger number of genuine samples.

			Max.	Min.	Mean.
Reichert-Wollny figure	188		33§	28·9§	
Percentage of volatile acids yiel (reckoned as butyric acid)	ded by	the fat	5.80	5.08	•••
Ratio butyric acid caproic acid		•••	•••	110	13.2
Percentage of soluble acids yield oned as butyric acid)	ed by fa 	t (reck-	•••	>##	4.98
Percentage of insoluble acids			•••		88.3
Iodine absorption value	•••	• • •	37.6	27.4	•••

Most of these results have been obtained by very well-known analytical processes. The ratio butyric acid has been obtained by weighing the dried potassium salts obtained on evaporating to dryness on the water-bath the titrated distillate from the Reichert-Wollny process. The weight agreed with the supposition that, practically, the whole of the acid in the distillate was butyric. Experiments with pure butyric acid showed that, on evaporating to dryness on the water-bath an aqueous solution of potassium butyrate, there was left the anhydrous salt  $C_4H_7O_2K$ .

These results may be translated into the more easily compre-

hensible form: -

The butter-fat consists of the glycerides of the following acids in the following proportions:—

	Max. per cent.	Min. per cent.	Mean. per cent
Butyrio	5.52	4.83	•••
Caproic	0.42	0.37	•••
Non-volatile acids soluble in water	•••	••	0.00
Oleic	41.70	30.40	
Palmitic and stearic	57:90	46.60	

<sup>§</sup> In the examination of 20 selected samples of Indian buffalo-ghee Dr. Datta (loc. cit.) had obtained the following values for the Reichert-Wollny figure:—Mean, 34.5; Max., 39.3; Min., 30.5.

These figures may be compared with the corresponding figures for (1) European cows; (2) the Egyptian buffalo.

	EUROPEAN COW.			Egyptian Buffalo.		Indian Buffalo.		
	Max.	Min.	Mean.	Max. Min.	Mean.	Max.	Min.	Mean
Butyric	3.92*	2.94*	3.52*		3.75	5·52	4.83	•••
Caproic	2·39*	1.79*	2.15*		0.94	0.42	0.37	
Non-volatile acid soluble in water (constitution un- known)			0.00	recorded.	2.95			0.00
Oleic	44.70†	26.20+	40.40+		36.00	41.70	30.40	•••
Palmitic and Stearic	62.24‡	42.98‡	47.50‡	Not	41.80	<b>57·9</b> 0	46.60	
Saturated acid of which Pb. salt is soluble in ether (constitution un-								
known)			0.00		11.10		þ	•••

The following points are noteworthy:-

1. It cannot be said that the butter-fat of the Indian buffalo is more similar to that of the Egyptian buffalo than to that of the European cow. This result is unexpected.

2. The percentage of volatile fatty acids is very high. This result was also obtained by Dr. Datta. It is probably the best

criterion for Indian buffalo butter-fat.

3. The volatile fatty acids are almost entirely butyric. The ratio butyric acid is \( \frac{1}{3} \) for the Indian buffalo; \( \frac{4}{1} \) for the Egyptian buffalo; \( \frac{3}{2} \) for the European cow. This result, if confirmed by further analyses, should prove of the greatest use in recognising Indian buffalo butter-fat. At present it appears possible to adulterate buffalo-ghee with a suitable vegetable oil and sell as cowghee. It should, however, be possible to distinguish the buffalo-ghee even in such a mixture by the high ratio of \( \frac{butyric acid}{caproic acid} \).

† Calculated from Iodine absorption figures of Rowland Williams (Analyst, June, 1894.)

<sup>\*</sup> Calculated from Reichert-Wollny standards, together with the ratio butyric acid deduced by Duclaux (Comptes Rendus, cii., pp. 1022, 1077).

<sup>‡</sup> Calculated from percentage of insoluble acids minus percentage oleic acid. For limits of percentage of insoluble acids, see Wynter Blyth, 'Foods,' p. 365; also Allen 'Commercial Organic Analysis,' Vol. ii, pt. 1, pp. 189 and 192.

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- 4. Richmond and Pappel concluded from their analyses that there is contained in the butter-fat of the Egyptian buffalo, the glyceride of an acid which they did not identify, which, however, does not belong to the oleic series, but of which the lead salt is soluble in ether. My work has given results which might be interpreted as indicating the presence of a similar glyceride in the butter-fat of the Indian buffalo. I am not, however, at present convinced that these results may not be due to the difficulty of getting accurate results by Muter's method for the estimation of olein. If it should be found that such a glyceride is really present in considerable quantity, its estimation should prove a valuable criterion of buffalo butter-fat.



39. A Parasite upon a Parasite,—a Viscum apparently V. articulatum, Burm., on Loranthus vestitus, Wall., on Quercus incana, Roxb.—By I. H. BORKILL.

Loranthus vestitus is quite a common parasite in the Simla Hill States, on trees of Quercus incana; and it makes use about Simla of other hosts also, such as Quercus dilatata, Lindl., and Machilus odoratissima, Nees (vide Gamble, specimens in Herb. Shibpur, and Manual of Indian Timbers, 1902, p. 583): elsewhere it lives on Odina Wodier, Roxb., Schleichera trijuga, Willd., Randia spp., Elæagnus spp. and species of Quercus other than Q. incana (vide Brandis, Forest Flora, 1874, p. 397).

Close to Ganekihatti near Simla, on a south hill face at 6000 ft., I found five small plants of a Viscum parasitic on the Loranthus, which was parasitic as usual on Quercus incana. The Viscum plants were small, only once branched and not yet in flower: but the cushions from which the stems arose were 1-2 cm. in diameter. Older branches had existed and died leaving their scars 4-5 mm. across: perhaps they had died in the unusual cold of the winter of 1904-05, which did so much damage to mange

trees in neighbouring valleys.

Viscum articulatum is a widespread mistletoe, accommodating itself to many hosts. Kurz (Preliminary Report on Forests and other Vegetation of Pegu, 1875, p. 43) calls it one of the most troublesome of the parasites of the mixed Forests of Lower Burma, and Blume and Treub (the former in Bijdragen tot de Flora van Ned. Indie, 1825, p. 667, and the latter in Ann. du Jard. bot. de Buitenzorg, iii., 1883, p. 3) say that it is very common at Buitenzorg in Java: it is certainly common in the Malay peninsula, and cannot be altogether rare in Southern India. A perennial needs a wide adaptability to grow both near Simla and in the warm forests of the Malay islands.

I have drawn together the list overleaf of plants known to be used as hosts by the Viscum. From it records which appeared to belong to V. japonicum, Thunb., and V. ramosissimum, Wall.,—

confused species—have been excluded.

Viscum articulatum is there seen to be a well-known parasite of its brother parasites: but, as far as I have been able to ascertain, its double parasitism has always hitherto been noticed under circumstances of a much heavier or more distributed rainful than in the outer hills of the North-Western Himalaya, where Euphorbia royleana, a couple of thousand feet lower down, attests by its great abundance to the dry conditions.

But this mistletoe is not the only Loranth parasitic on another Loranth. Viscum album in Europe is sometimes parasitic on Loranthus europæus (vide Engler, Pflanzenfamilien, iii. pt. 1. 1889, p. 194; Hemsley in Journ. Linn. Soc. Bot., xxi., 1896,

<sup>1</sup> Some effects of this frost are given in a note by Mr. Atha Ram, Indian Forester, xxxii., 1906, p. 24.

Host-plants of Viscum articulatum.

Nat. Order.	Name.	Locality.	Authority.  Miquel.  Brandis.2	
Anonaceæ	P	Java		
Ternstræmiaceæ	Eurya	S. India.		
Sapindaceæ	Acer Campbellii, Hook. f. and Thoms.	Sikkim	Gamble.4	
Anacardiaceæ	Rhus	•	Brandis.2	
Rosaceæ	Prunus Armeniaca, Linn.		Brandis.2	
Cornaceæ	Cornus capitata, Wall.	Simla	Gamble.3	
Ericaceæ	Rhododendron arbore- um, Sm.	P N.W. Himalaya.	Brandis.2	
(	Diospyros Melanoxy-	Dharwar, S. India.	Talbot.5	
Ebenaceæ {	lon, Roxb. Diospyros sp. Diospyros sp.	Central India. Bengal.	Duthie.3 Kurz.3	
Oleaceæ	Olea.	P	Brandis.2	
	Loranthus pentandrus, Linn.	Penang.	J. Scott.	
	Loranthus pentandrus, Linn.	Dutch Indies.	Korthals.6	
Loranthaceæ {	Loranthus sphærocar- pus, Bl.	Dutch Indies.	Korthals.6	
	Loranthus vestitus,	N.W. Himalaya.	above.	
	Loranthus spp.	Singapur. Burma.	Ridley.7 Kurz.4	
Cupuliferæ {	Quercus incana, Roxb. Quercus glauca, Thunb. (Q. annulata, Sm.)	N.W. Himalaya. N.W. Himalaya.	Brandis. <sup>2</sup> Brandis. <sup>2</sup>	
	Quercus dilatata, Lindl. Quercus Ilex, Linn.	N.W. Himalaya. N.W. Himalaya.	Brandis 2 Brandis 2	

Flora Ind. Bat., I., pt. I, 1858, p. 806.
 Forest Flora, 1874, p. 397.
 On labels of specimens preserved at the Royal Botanic Gardens, Shibpur.

4 List of Trees and Shrubs of the Darjeeling District, 1878, p. 66.

5 List of Trees, Shrubs, of the Bombay Presidency, 1902, p. 293.

6 In Verhandl. van het Bataviaasch Genootschap, xvii., 1839, p. 258.

7 In Journ. Roy. Asiat. Soc., Straits Branch, xxxiii, p. 134.

p. 307, and Mina-Palumbo in Boll di Entom. Agrar., iii. 1896, p. 19, quoted from Just's Jahresber., 1896, i., p. 353); Viscum album occurs as well on its own kind (vide Guerin in Revue de Botanique, viii., 1890, p. 275, and elsewhere); Guerin observed it to fruit growing on a brother plant; Viscum tuberculatum, A. Rich., is found in Africa parasitic on Loranthus regularis, Steud.; and Viscum tenue, Engl., is found on both Loranthus Schelei, Engl., and L. subulatus, Engl., in the high forest of Usambara (vide Engler in Bot. Jahrbucher, xx., 1894, p. 81); while Tupeia antarctica, Cham. & Schlecht., is sometimes found in New Zealand on Loranthus micranthus, Hook.f. (J. D. Hooker, New Zealand Flora, 1867, p. 108).

Of the allied order Santalaceae one species of *Phacellaria* was collected by Griffith on a Loranthus at Mergui; another by Sir George Watt on a Loranthus in Manipur (J. D. Hooker, Flora Brit. India, iv., 1886, p. 235); a third and a fourth were collected by Sir Henry Collett in the Shan Hills on a Loranthus, and on *Viscum monoicum*, Roxb., respectively (Collett and Hemsley in

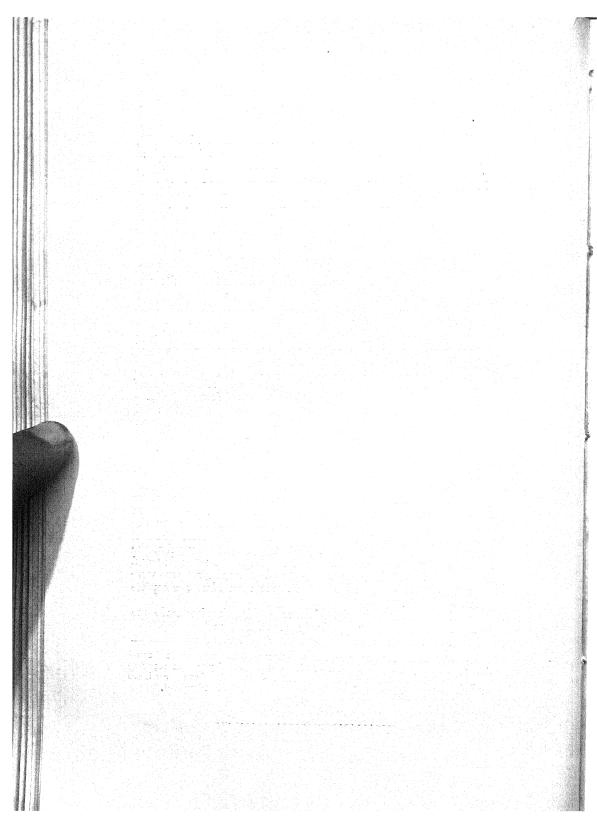
Journ. Linn. Soc. Bot., xxviii., 1890, p. 122).

Viscum articulatum and tenue are leafless, and so are the Phacellarias: but Viscum album and tuberculatum are leafy, and so is Tupeia antarctica, though not abundantly so. We cannot, therefore, say that double parasitism and leafiness are incompatible: yet one would think that a water supply twice fought for, i.e., between the first parasite and its host and between the second parasite and the first, would be so hardly won as to lead to the need of the utmost economy of water on the part of the second parasite.

Viscum articulatum is a very variable plant and so is Tupeia antarctica. Engler says (Bot. Jahrbucher, xx., 1894, p. 80) that the African Loranths which grow in moist forests have larger leaves than species of the steppes. Molkenboer, a Dutch botanist, has hinted that there may be some relation between the nature of its host and the form that the parasite takes (Plantæ Junghuhnianae, 1850, p. 107): Korthals (loc. cit.) says that the more fortunate in circumstances is the Viscum, the broader and more leaflike are its stems. If that be so, then my specimens were most unfortunate, for there was in them an almost complete absence of wing.

It is this almost complete absence of wing that has made me to name mine above as "apparently V. articulatum."

<sup>&</sup>lt;sup>1</sup> This Loranthus was parasitic on a Quercus. Not a single record can I find of the complete identification of all three associated plants in reported cases of double parasitism. This case and Mina-Palumbo's, above quoted, are the most completely reported, but in neither is the Quercus identified.



40. An Old Form of Elective Government in the Chumbi Valley.— By E. H. Walsh.

An interesting form of elective government exists in the Chumbi Valley which has been in force from time immemorial and is probably of very great antiquity. Although at the present time its functions are merely the local administration under the control of the Jongpons, the Tibetan officials at Phari, it, no doubt, survives in its present form from the time when it was the independent Government of a small republic state. Until recent years the control exercised by Tibet over the affairs of Tromo, which is the Tibetan name for the country known to Europeans as the Chumbi Valley, has been merely nominal and has consisted in the payment of an annual tribute by the Tromowas to the Tibetan officials at Phari, and the obligation to provide ula or transport for Tibetan officials visiting the valley, whose visits were, however, of very rare occurrence. The Tromowas ( ヿ゚゙゙゙゙゙゙゙゙゙゙゙゙゙゙゙゙゙゙゙゙゙゙゙゚ヿ゚゙゙゚゙゙゙゙゙゚゚) are in fact a distinct people from the Tibetans. They never speak of themselves as "Tibetans," Po'pa (554) and no Tibetan ever speaks of them as Tibetans. Their language, though a dialect of Tibetan, contains many distinctive words and forms, which alone points to a separate origin, and their customs differ in many respects.

Even in Tromo itself there are two distinct races, the Upper Tromowas, who inhabit the upper portion of the Chumbi Valley, and the Lower Tromowas, who inhabit the lower or

southern portion.

The dialect spoken by these two races differs, and their customs also shew marked and characteristic differences, shewing their distinct origin. To make this clear I give the following extract from the introduction to my vocabulary of the Tromowas dialect: "To shew how these two peoples, living in intercourse "with one another, have maintained their distinction in other "respects than in dialect, it is only necessary to mention one or two "points of difference. Many of the Upper Tromowas are of the "old Bon-pa religion, which was the religion of Tibet before the "introduction of Buddhism, whereas none of the Lower Tromowas "are. The Upper Tromowa men wear the pigtail, whereas the "Lower Tromowa men cut the hair short like the Bhutanese. The "Upper Tromowa women wear the hair in two plaits, which are "united down the back. The Lower Tromowa women, while "making the hair in two plaits, tie these separately round the "head and do not let them hang down. In the matter of "the men's dress, too, there was a difference until recent years,

<sup>1</sup> A Vocabulary of the Tromowa Dialect of Tibetan by E. H. C. Walsh, Bengal Secretariat Book Depôt (page ii).

"as the Lower Tromowas wore the Bhutanese form and material "of clothing; and though all except the older men have given this "up and wear the Tibetan form of dress worn by the Upper Tromowas, a few of the older men still wear the Bhutanese form of "dress."

"As to their respective origins, the tradition of the Upper "Tromowas is that there were certain original inhabitants who have always lived in the valley from pre-historic times. These are known as Khyim-ser-Rawa-nang-pa, 'Those within the fence of the golden house.' Next after these come the Chi-pon Tsang-khor, who immigrated here from the Khams province of Tibet. This is said to have been a very long while ago, and there is no history of their coming. A second immigration known as Nam-khen-pa, the 'sky knowers,' are said to have come from Sakya, subsequently to the Chi-pons, though the date of their arrival is also not known. These three classes have all intermarried and become one people.

"The Lower Tromowas say that the original inhabitants of the lower valley were called Sakya-pas, namely, 'men of Sakya,' who were probably an offshoot of that second immigration into "Upper Tromo. Subsequently the Ha-pas, people of the province of Ha in Bhutan, came in about 400 years ago with a Chieftain named Shab-Dung Lha Rinpochhe, who held possession of the Valley for a time, and they subsequently remained and settled

"down there."

The point is of interest as shewing how the Upper Tromowas have maintained their racial distinction, which accounts for the existence of a form of electoral government peculiar to themselves.

Since 1889, a distinct but similar elective local government has existed in Lower Tromo into which it was then introduced by the Tibetans, on the model, with certain minor modifications, of that existing in Upper Tromo. The reason for its introduction was that since the Sikhim War of 1888 the Tibetans found it necessary to exercise direct control over the Chumbi Valley, and found that although the organisation of the Upper Tromo was able to supply them with any transport or supplies that their officials or troops might require, there was no such organisation in Lower Tromo, and they therefore constituted one on the same model as that which they found in Upper Tromo.

As already stated, until recent years, The Tibetan Government interfered very little with the Chumbi Valley, more than receiving their annual tribute, and in the fact that more serious criminal offences had to be referred for punishment either to the

Jongpons or to the Government at Lhasa.

The local administration of Upper Tromo is by two officers called *Kongdus*, who act jointly and are elected for a term of three years. The election is made from the *Tsho-pas* or headmen of the villages. These *Tsho-pas* are themselves elected by their

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villagers, but when once elected continue to be *Tsho-pus* unless the villagers were to remove their name which would only be done on the ground of old age or loss of money or position or anything else that would render them unfit to hold the office of *Kongdu*.

The number of *Tsho-pas* in each village is not limited.

Once every three years on the 15th day of the 4th month, the villagers all assemble at a fixed meeting-place near Galingkha, the principal village of Upper Tromo, and present to the two Kongdus for the time being, a list of the Tsho-pas of their respective villages. For the purpose of election, Upper Tromo is divided into two divisions, one of which consists of the upper and lower villages of Galingkha and the other of the remaining seven villages of the upper valley. The Kongdus are elected alternately from these two divisions.

From the lists presented by the villagers the two Kongdus select the names of the four persons in the other division to their own, whom they consider to be the most suitable to be the next Kongdus. They then throw with three dice in the name of each of the four persons they have selected, and the two who obtain the highest throw are chosen as the Kongdus for the coming term

of three years.

This ceremony takes place before an old stone altar situated under a tree, and sacred to the Yul-Lha or deity of the locality, before which is placed the banner which is the insignia of the Kongdu's office. It has no connection with the Buddhist religion, and points to an anterior origin. The two Kongdus thus selected then decide be-

tween themselves which is to be the Thri-pa ( T) or Chairman.

The one who is recognised as having the superior wealth or social influence is always chosen, but if the two selected candidates should consider themselves equal, the elder man becomes *Thri-pa*. The *Thri-pa* has the right of keeping the banner in his house.

The newly-elected Kongdus do not enter on office at once. This is done in the eleventh month when another ceremony takes place and a yak is sacrificed at the stone altar already mentioned. The yak is skinned and the skin is placed in front of the altar with the head of the yak resting on the altar, and the new Kongdus place their hand on the bleeding skin and take an oath on the sacrifice that they will administer justice "even between their own son and their enemy." The outgoing Kongdus then make over to them their banner, the insignia of their office, and with the banner they take over all the rights and powers of the office.

The Kongdus say that they do not hold their power from the Tibetan Government but from the Yul-Lha, the local deity, that they originally got the banner from him and have always held their power from him. The administration is thus theocratic as well as elective, and the god also takes part in the selection, through the result of the throwing of the dice before his altar.

The duties of the Kongdus to Government are to pay the annual tribute and to provide any transport or supplies that the Government may require. This falls under the following heads: Ula—supply of coolies; mi-hrang—supply of messenger; tao—supply of transport and riding mules and ponies; khyem—supply of yak transport; tsa-thre—supply of grass; shing-thre—supply of wood; thab-yog—supply of personal servants to officers while on tour.

The revenue paid to the Tibetan Government consists of 40 srangs (Rs. 100) for the grazing rights on the Lingma thang plain and on the hills; 120 bundles of bamboos, 60 wooden beams and 8 maunds of tsod leaves, which are used for dyeing. To meet these and other expenses, the Kongdus assess the land rent, a grazing rent, a house tax, which is really a personal tax as it is levied on the circumstances of the family and not on the value of the house, and a cattle tax. These taxes are assessed by the newly appointed Kongdus and remain in force for their term of office of three years. Should the amount so raised in any year not be sufficient to meet expenses, the house tax can be levied more than once in the year.

These funds are entirely under the control of the Kongdus and a large portion of them is spent on entertainment at the two ceremonies of the election of Kongdus and of their taking over charge of their office, at the quarterly meetings of the Tsho-pas and on any other special occasion, and in contributions to the various village Lha-khangs or temples, and towards religious

ceremonies.

The people have absolute confidence in the Kongdus, and as they are men of sufficient substance, could recover from them in case of default; but I was told that such a case had never occurred. The Kongdus, apart from public opinion, are also restrained by the oath taken before the Yul-Lha on taking office, and would consider that any breach of trust in respect of the funds would bring them divine punishment and misfortune. They render a quarterly account of expenditure to the Tsho-pas, who assemble for the purpose. The Kongdus are exempted from land rent and all taxes during the term they hold office, and they also receive a present from each village at the ceremony of taking charge of their office, but receive no other remuneration.

The Kongdus also decide all civil disputes and questions of family right such as the share of the property which a woman is entitled to if a divorce is granted on her application. They also try criminal offences other than thefts, grievous hurt, by which is implied loss of a limb, and murder, which have to be referred to the Tibetan officials at Phari. They also make regulations for the allotment of the grazing grounds among the different villages, the maintenance of the village forest reserve, and enforce the local customs generally. They have the power of inflicting fine or beating. Though they are of the people themselves, their orders are invariably respected. I had nearly a year's experience of the working of this system when I was in Chumbi, as all supplies

and local transport were obtained through the Kongdus of the upper and lower valley, and I was struck by the manner in which the villagers carried out their orders and supplied the portion of any requisition which they allotted to a particular village without

disputing the allotment.

Each Kongdu has under him four officers known as Layoks, who perform the duties of orderlies and messengers and carry the orders of the Kongdu to the Tsho-pas. He has one Layok for each of the Tshos or divisions into which the villages are divided for the purpose of grazing rights. The La-yoks hold their land rent-free and are exempted from taxes, and also each receive

a yearly sum of 9 srangs (Rs. 22-8) as salary.

The land rent is levied on the amount of land held, which is estimated from the amount of seed sown on it, and comes to about As. 15 per acre. For the purpose of the house tax there are eight classes which are each assessed at a different rate, varying from Rs. 5 for the highest to As. 2 for the lowest class. The class in which each household is placed is decided by the new Kongdus at the first meeting of the Tsho-pus, who assist them in making the assessment, and also report whether any land has changed hands from one family to another; for no one is allowed to part with his lands to an outsider. Thus a man of Upper Tromo may not even sell or mortgage land to a man of Lower Tromo. Nor is anyone allowed to part with the whole of his land, lest he should leave the country and so be lost to the house tax and to the liability to personal service.

In the case of the grazing grounds, a fixed sum of 5 srangs (Rs. 12-8) is allotted to each of the 19 grazing grounds into which the various ranges of hills in the different villages are divided. These are allotted by the Kongdus between the different villages of the four Tshos groups, and the amount of rent paid by each group therefore depends on the number of grazing grounds allotted to it. This and the distribution of the grazing rent to each village is decided by the Kongdus at the

meeting of the Tsho-pas.

Another of the duties of the Kongdus is to regulate the cutting of the grass on the Lingma thang plain, which is the chief grass supply for the winter's hay. The plain is closed to grazing on a fixed day, the 5th day of the 5th month (June), and one of the La-yoks is stationed there to see that no one grazes cattle or mules upon it. Anyone doing so is liable to fine or beating under order of the Kongdus. On either the 6th or 7th of the 9th month (October), everybody assembles from all the villages and the Kongdus take their banner and encamp at the lower end of the plain. They then worship the Yul-Lha, and after the ceremony the Kongdus declare that the grass can be cut. Everyone then sets to work at once to cut the grass, and the cutting is completed in about a week. This furnishes the supply of hay for the winter.

As has been already mentioned, the Tibetan Government, when it wanted to create an organised administration in Lower Tromo.

took the Upper Tromo administration as its model, and the two Commissioners deputed (the Ta-Lama and the Lhalu Shapa) in-

troduced it with certain modifications.

Although, therefore, the system, as it exists in Lower Tromo, is of no historical interest, it is interesting as shewing the alterations which were made from the original system of Upper Tromo, and also from the fact that the Tibetan Government gave the Kongdus a banner as their insignia of office, similar to that held in their own right by the Upper Tromo Kongdus. The Lower Tromo Kongdus have also, on their own account, adopted some of the ceremonies of the Upper Tromowas, except that in respect to the Yak sacrifice on the ceremony of their appointment.

The alterations which the Tibetan Commissioners made from the ancient system of Upper Tromo were: The number of Kongdus has been fixed at three instead of two, and they are appointed annually and hold their office for one year instead of for a term of three years. The elective system by which every village chose its own Tsho-pas from whom the Kongdus selected and who assist the Kongdus in their assessments, has also been altered. Eighteen Tsho-pas were appointed to represent the eleven villages of Lower Tromo, and from these the Kongdus are selected in rotation: the first three for the first year, the next three for the second, and so on, so that all the list is worked through in six years and the office then comes back to the first three again. Any Tsho-put may, however, resign when the village which he represents elects the Tsho-pa to take his place on the roster, and similarly in the case of death. The Tsho-pas are so arranged on the list that each group of three represents three different villages; there can never be two Kongdus from the same village at the same time.

The three Kongdus on taking office elect one of themselves as Thri-pa or Chairman, and take over the banner from the outgoing Kongdus, and the Thri-pa keeps the banner in his house. They also take an oath before the banner to administer justice

truly "even between their own son and their enemy."

Their duties are the same as those of Upper Tromo.

41. Gentianacearum Species Asiaticas Novas descripsit
I. H. Burkill sequentes.

Inter Frigidas, ex affinitate G. ornatæ, Wall., et præcipue G. ternifoliæ, Franch.

Gentiana Arethusæ.—Planta fontinalis, cæspitosa, 10-16 cm. alta, omnino glabra, e medio ramorum floriferorum caulem unicum repentem producens. Rami floriferi subdecumbentes, hexaphylli, internodiis quam foliis longioribus: rami stoloniformes 6-10 cm. longi, bracteati, internodiis quam bracteis longioribus. Folia constanter 6-verticillata, inferiora ovato-elliptica acuta 3-4 mm. longa gradatim in superioribus linearibus 10-14 mm. longis 1.5 mm. latis transeuntia: verticillus supremus in calycis basi insidens. Flores solitarii, læte cœrulei. Calycis tubus 10-12 mm. longus, vinoso perfusus, anguste campanulatus margine intergro: dentes 6, lineari-lanceolati, 5-8 mm. longi, 2 mm. lati, acuti. Corollæ tubus tubuloso-infundibuliformis, 4-5 cm. longus, ad os 15-18 mm. diametro: plicæ magnæ: lobi 6, deltoidei, caudati 5 mm. longi: plicarum lobi ad auriculas sinuatas tot quot petala reducti. Stamina intra fauces delitescentia, 28-32 mm. longa, ad corollæ tubi tertiam partem adnata. Ovarium stipitatum, stipite 18-20 mm. incluso 30 mm. longum: stylus 1.5 mm. longus: stigmata 5 mm. longa.

CHINA OCCIDENTALIS.—In provinciæ Szechuen districtu Tchen-

keou-tin, Farges, 253.

Typus in Herbario Horti Botanici Parisiensis conservatus

Inter Frigidas, ex affinitate G. cephalanthæ, Franch. et G. crassæ, Kurz.

GENTIANA ATKINSONII.—Planta subcæspitosa. Caules decumbentes, plurimi, teretiusculi, castanei, ad 25 cm. longi. Folia basalia subrosulata, lineari-lanceolata, apice rotundata, basi acuta glabra, maxima ad 10 cm. longa ad 8 mm. lata: folia caulina basalibus similia, pleraque 6 cm. longa 6-8 mm. lata, tubulosovaginata, vagina 6 mm. longa: petiolus 5-0 mm. longus. Flores 3-6 ad apices ramorum, quisque inter bracteas duas vaginantes Calycis tubus tubuloso-campanulatus, quinquesubsessilis. angulatus, 8-9 mm. longus: dentes inæquales, lanceolati, marginibus scabridi, parum carinati, acutiusculi, 4-7 mm. longi. Corollæ tubus 20-22 mm. longus, tubuloso-campanulatus: plicæ magnæ: dentes ovato-deltoidei, 4 mm. longi, 3 mm. lati: plicarum lobuli inæquilaterales, serrulati, 1 mm. longi. Stamina fauces æquantia, paullo infra corollæ tubi medium inserta. Ovarium 12 mm. ongum: stylus brevis. Semina reticulata.

CHINA ORIENTALIS.—In provinciae Kwang-tung montibus

Lofan dictis ad alt. 3000 ped., J. M. Atkinson, 322.

Floret mense Septembris. Typus in Herbario Horti Botanici Regalis Kewensis conservatus est.

Inter Apteras, ex affinitate G. Walujewi, Regel et Schmalh. et G. decumbentis, Linn.

Gentiana Pharica.—Planta omnino glabra. Caules 1-3, subdecumbentes, 8-14 cm. longi. Collis fibrosus. Folia radicalia infundibulo-connata, 3-5-nervia, margine integra, apice acuta, basi subacuta, plurima 8-10 cm. longa et 14-22 mm. lata: folia caulina similia, at minora, ad 4 cm. longa. Flores 5-7, omnes in glomerulo terminali capitati vel duo inferiores paullo remoti ad apices ramorum pedicelliformium producti, viridi-straminei. Calyx dimidio-spathaceus, quinquedentatus, fissuræ marginibus scariosis, 13-18 mm. longus: dentes perparvi, virides, 1-2 mm. longi, subulati, basi in angulum acutum exhibentes. Corollæ tubus 17-20 cm. longus, 8-9 mm. diametro, tubuloso-campanulatus: plicæ conspicuæ: lobi 5, ovati, 4-5 mm. longi, 4-5 mm. lati: plicarum lobuli ovati, marginibus 1-2-dentati, 2 mm. longi. Stamina corollæ tubo breviora, 15 mm. longa, ad corollæ tubi dimidium adnata, filiformia. Ovarium angustum, nec stipitatum, 10-12 mm. longum: stylus 2 mm. longus.

ALPES HIMALAICAE ORIENTALES.—Ad fines thibetico-sikkimenses, prope Lonok, Younghusband, 195; Kangma etiamque in ripis rivuli Penamong Chu, Dungboo; prope Dotho, Dungboo.

Typi in herbariis Hortorum Botanicorum Regalium Kewensis et Calcuttensis conservati sunt. Species hæc Gentianæ Walujewi, Regel et Schmalh., proxima est.

Gentiana Waltonii.—Planta omnino glabra, ad 2.5 cm. alta, caulibus 1 vel 2 erectis. Collis fibrosus. Folia radicalia linearilanceolata, infundibulo-connata, 3-5-nervia, nervis extimis dimidium versus evanescentibus, margine integra, basi et apice longe attenuata, plurima 10-15 cm. longa 1.5-2 cm. lata: folia caulina radicalibus similia at multo minora, ad 4 cm. longa. Flores fere sessiles, at inferiores in apice internodii pedicelliformis 1-3 cm. longi insidentes. Calya dimidio-spathaceus, quinque-dentatus, fissuræ marginibus scariosus, 18-25 mm. longus: dentes inæquales, virides, 2-8 mm. longi, subovati. Corollæ tubus longe campanulatus, 3-5 cm. longus, 1 cm. diametro: plicæ conspicuæ: lobi 5, 7-10 mm. longi, lilacini: plicarum lobuli 3-4 mm. longi, ovato-deltoidei. Stamina corollæ tubo æquilonga: filamenta ad medium tubi affixa, filiformia. Ovarium stipitatum: stipite incluso 2-5 mm. longum: stylus 2-3 mm. longus: stigmata in ætate recurvata.

THIBET.—Sine loco indicato, mercenarius Kingianus, 277, 295, 1659; in valle rivuli Kyi-chu dicti, prope Lhasa, Walton, 1645; Lhasa, 12000 ped., Waddell; et ad Gyangtse, Walton, 1648.

Typi in herbariis Horti Botanici Regalis Kewensis et Horti Botanici Regalis Calcuttensis conservati sunt. Species hæc in mense Augusti floret; Gentianæ decumbenti, Linn., persimilis est.

Inter Apteras, ex affinitate G. kaufmannianæ, Regel et Schmalh., et G. dahuricæ, Fisch.

Gentiana lhassica.—Planta omnino glabra, ad 8 cm. alta. Caules 1-6, uniflores, subdecumbentes. Collis fibrosus. Folia radicalia linerari-lanceolata, infundibulo-connata, 3-nervia, margine integra, apice rotundato-obtusa, basin versus attenuata, plurima 7-9 cm. longa, 8-10 mm. lata: folia caulina anguste elliptica, longe vaginato-connata, apice obtusissima, 15-20 mm. longa, 6 mm. lata. Flores solitarii, inter folia caulina suprema duo fere sessiles. Calyx infundibulo-tubulosus, viridi-purpurascens: tubus 1 cm. longus: lobi subæquales, anguste ovati, sinubus rotundatis, 5 mm. longi. Corollæ tubus campanulatus, 15-18 mm. longus, 4-5 mm. diametro: plicæ magnæ: lobi 5, rotundato-ovati, 4 mm. longi, lilacini: plicarum lobuli ovati, acuti, 1 mm. longi. Stamina corollæ tubum æquantia: filamenta ad tubi medium adnata. Ovarium vix stipitatum, 1 cm. longum: stylus 2 mm. longus.

Thiber.—In valle rivuli Kyi-chu dicti, prope Lhasa, Walton,

1642.

Typi in herbario Kewense etiamque in Herbario Calcuttense conservati sunt. Floret mense Septembri.

Inter Apteras, ex affinitate G. macrophyllæ, Pall., et G. tibeticæ, King.

Gentiana crassicaulis, Duthie in Herb. Kew.—Planta omnino glabra, 30 cm. alta et altior, caule singulo an semper? an plerumque?), erecta. Radices 2-3 incrassati. Collis fibrosus. Caules fistulares. Folia radicalia petiolata, longe elliptico-ovata, vaginato-connata, 5-nervia, nervis inconspicuis sed in apicem ineuntibus, margine integra, basi acuta, apicem versus angustata, at apice acuta, minute mucronata, ad 14 cm. longa et 5 cm. lata: vagina 2-4 cm. longa: petiolus ad 4 cm. longus: foliorum caulinorum mediorum petioli vaginato-connati, vagina ampla: lamina e vaginæ margine expansa obovata, ad 10 cm. longa, apice obtusa: folia suprema quattuor involucram formantia, sessilia nec connata, mediis lamina similia. Flores 20-30, in capitulum aggregati, corollæ tubo viridi-albescentes livido maculati, lobis lividis. Calya dimidiato-spathaceus, transparens, dentibus perparvis indistinctis, 6-7 mm. longus. Corollæ tubus 12-15 mm. longus, 4 mm. diametro:

plicæ conspicuæ: lobi ovati, obtusi, 4 mm. longi, 2-2.5 mm. lati: plicarum lobi 1 mm. longi, acuti. Stamina corollæ tubo æquilonga ad tubi mediam partem affixa. Ovarium stipite mellifluo incluso

8-9 mm. longum, elongatum: stylus 1 mm. longus.

China australis.—In provincia Yunnan, in pratis humidis regionis alpinæ montis Hee-gui-chao, alt. 9500 ped., Delavay, 1241: etiamque in provincia Szechuen, ad Tongolo, Soulié, 675; et ad Tachienlu, Pratt, 463. Vidi et enim specimina culta ex Horto Botanico Regali Kewense.

Typi in Herbario Kewensi conservati sunt. Maxime cum Gentianam thibeticam, King, congruunt: sed floribus minoribus

conspicuissime different.

Inter Isomerias ex affinitate G. amœnæ, C. B. Clarke, et præcipue G. callistanthæ, Gilg.

Gentiana amplicrater.—Planta omnino glabra, nana, floribus magnis inclusis 5-6 cm. alta. Collis non fibrosus. Folia rosulata, ovata, 3-nervia, margine æqualia scariosa, apice obtusa, 2-3 cm. longa, 15-18 mm. lata, per paria infundibulum formantia, fere ad medium connata. Flores duo, subsessiles, alter vetustior, alter junior, lilacini. Calyx tubulosus, quinque-dentatus, viridis: tubus 2 cm. longus, ad os 12 mm. diametro: dentes inæquales, quadrato-ovati, scarioso-marginati, majores 10 mm. longi, 5-7 mm lati, minores 5 mm. longi 3 mm. lati, sinubus subquadratis. Corollæ tubus ventricosus, 4 cm. longus, 15 mm. diametro, amphoriformis: plicæ magnæ: lobi ovati-triangulares, 6-8 mm. longi, 6-8 mm. lati: plicarum lobuli ovati, 4 mm. longi. Stamina corollæ tubo breviora: filamenta ad partem dimidiam inferiorem affixa. Capsula staminibus æquilonga, angusta: stylus 3 mm. longus: stigmata parva.

THIBET.—Prope Lhasa ad fauces Pembu-la dictas, Walton,

1657.

Typi in herbariis Horti Botanici Regalis Kewensis etiamque Horti Botanici Regalis Calcuttensis conservati sunt. Gentiana amplicrater ad G. depressam, Wall., maxime accedit, differt floribus majoribus: ad G. callistantham, Diels et Gilg, etiam accedit; foliis differt.

#### Inter Isomerias.

GENTIANA AMENA, C. B. Clarke, var., MAJOR.—Flos major:

tubus ad 22 mm. longus, 10 mm. diametro.

THIBET.—sine loco designato, mercenarius Kingianus, 101, 1658; prope fines sikkimenses ad Khambajong, 19000 ped. alt., Prain, 1653.

Typi in herbariis regalibus Hortorum Botanicorum Kewensis

et Calcuttensis conservati sunt.

Inter Chondrophyllas, ex affinitate G. pseudo-aquaticæ, Kusnezow, et G. humilis, Stev.

Gentiana pseudo-humilis.—Planta nana, compitosa, caulibus subdecumbentibus ad 8 cm. longis, omnino glabra. Folia radicalia ovato-orbiculata, mucronata, ad 4 mm. longa margine cartilaginea: folia caulina obovata, recurva, margine scariosa, per paria 5-8 equidistantia posita, 4-5 mm. longa, 3 mm. lata, vaginato-connata. Flores solitarii, pedicellati vel subsessiles, cœrulei. Calycis tubus decem-angulatus, ad angulas minopere cristatus, 5 mm. longus, 2 mm. diametro, margine æquali; dentes lanceolati, acuti. dorso minopere albo-cristati, albo-marginati, 2 mm. longi. tubus 7 mm. longus: plicæ magnæ; lobi ovati, obtusi vel subacuti, 2-5 mm. longi: plicarum lobuli ovati dimidium loborum æquantes. Stamina fauces attingentia: filamenta supra corollæ tubi medium affixa. Ovarium stipitatum 3 mm. longum; stipes vix 2 mm. longus: stigmata antheras attingentia. Capsula longe exserta, longe stipitata, fere lenticularis, 5 mm. longa. Gentiana intermedia, Burkill MS. in Herb. Kew.

ALPES HIMALAIGAE OCCIDENTALES ETIAMQUE SIBERIA.—In regione himalaica Garhwal, ad Gothing, 13000 ped., Strackey et Winterbottom, 15: in regionis Kulu valle Piti ad Nako et ad Changar T. Thomson: in regionis Chumba districtu Lahul, Hay: intra fines Kashmiricas, in districtu cis-indusino Rupshu, 15000-18000 ped. alt., Stoliczka; et Kargil ad fauces Namika, T. Thomson; etiamque prope vicum Kargil boream versus, Stoliczka; in valle fluminis Indus prope Leh, ad Hemis, Heyde; inter Leh et Lipshi, 12000-14000 ped. alt., Stoliczka; in valle transindusino fluminis Shayak prope Karsar, T. Thomson. In Afghanistania, Griffith 5823 K.D. In Siberia meridionale ad Irkutsk, Vlassow.

G. pseudo-humilis G. humili habitu persimilis; differt foliis recurvis.

Inter Chondrophyllas, ex affinitate G. purpurate, Maxim., et G. recurvate, C. B. Clarke.

Gentiana panthaica.—Planta omnino glabra, ad 10 cm. alta. Caulis herbaceus, ramos solitarios 2-5 gerens: rami caules fere acquantes, internodiis quam foliis longioribus. Folia basalia rosulata, ovata, ad 8 mm. longa, ad 5 mm. lata, acuta: folia caulina horizontalia at apice paullo deflexa, deltoideo-ovata, acuta vel acuminata, suprema per paria vaginato-connata. Flores conspicue pedicellati, iis Gentianæ recurvatæ majores, erecti vel nutantes. Calycis tubus 5 mm. longus, infundibularis, 3 mm. diametro, 5-angularis: dentes e basi semicirculari 1 mm. longa conspicue acuminati, acumine 3 mm. longo. Corolla post anthesin crescens: tubus 8 mm. longus, fauce 4-5 mm. diametro: plicæ magnæ: lobi ovati, 5 mm. longi, obtusi: lobuli plicarum ovati, eleganter fimbriati. Stamina fauce paullo excedentia: filamenta ad tubi mediam partem affixa. Ovarium stipitatum, 4 mm. longum; stipes

2-5 mm. longus: stylus 1 mm. longus. *Capsula* clavata, stipite 5 mm. longo incluso 7 mm. longa, apice obtusissima.—*Gentiana recurrata*, Forbes et Hemsley in Journ. Linn. Soc. Bot., xxvi, 1890, p. 133.

CHINA AUSTRALIS.—In provincia Yunnan, in pratis ad collem

Yen-tse-hay, Delavay.

Typi in herbariis Horti Botanici Regalis Kewensis Hortique Botanici Parisiensis conservati sunt. Species hæc quam Gentiana recurvata robustior est et floribus major.

Inter Chondrophyllas ex affinitate G. pedicellatæ, Wall., etiamque aliquomodo G. apricæ, Decne.

GENTIANA LISTERI.—Planta nana, omnino glabra, 4-6 cm. alta, erecta, sæpe multicaulis, 3-12-flora. Caulis minutissime asper, internodiis quam foliis sæpe multo brevioribus. Folia radicalia rosulata, late ovata, apice mucronulata, 6-10 mm. longa, ad 7 mm. lata: folia caulina suberecta, per paria infundibulo-connata, ovata, cartilaginea, inferiora margine indurata, superiora margine albo-scariosa, apice mucronulata, hamata, internodiis æqualia vel longiora. Flores ? cœrulei. Calycis tubus 5 mm. longus: dentes 3-35 mm. longi, subulati, lineares, vix carinati, erecti. Corollæ tubus 8 mm. longus, tubulosus: plicæ conspicua: lobi ovati, obtusi, 2.5-3 mm. longi; plicarum lobuli rotundati, fere integri. Stumina ad tubi medium affixa: filamenta lineari-subulata: antheræ fauces æquantes. Ovarium stipitatum; stylus nullus. Capsula matura sublenticularis ad fauces corollæ protrusa, fere 4 mm. longa, et 3 mm. lata. Semina elongatotrigona, levia, 5 mm. longa.

ALPES HIMALAICE ORIENTALES.—In districtu Darjeeling, in monte Tonglu, Lister, King; et ad oppidum Darjeeling, 6000 ped. alt., Anderson: intra fines sikkimensis ad Yakla, 10000 ped.

alt., C. B. Clarke, 27831.

Inter Chondrophyllas, ex affinitate G. ripariæ, Karel. et Kiril.

Gentiana albicalyx.—Planta annua, nana, omnino glabra, 10-11 mm. alta, multiflora. Folia orbiculato-spathulata, conspicuissime albo-marginata, 4-5 mm. longa, 4-5 mm. lata, margine albo 0.5 mm. lato. Flores densissime aggregati, purpureo-lividi. Calyx tubulosus, quinque-dentatus: tubus scariosus, 2 mm. longus, 1 mm. diametro: dentes orbiculares, albo-marginati, dorso albocristati, 1 mm. longi. Corollæ tubus 3 mm. longus, 1.5 mm. diametro, infundibuliformis: plicæ sat conspicuæ: limbus expansus 7 mm. diametro: lobi viridi-lilacini, ovati, fere 2 mm. longi, 1.5 mm. lati: plicarum lobuli inæqualiter bifidi, brevissimi. Stamina fauces æquantia: filamenta ad superiorem partem tubi affixa. Ovarium stipitatum; stylus brevis, vix 1 mm. longus. Capsula ovoideo-lenticularis, 2 mm. longa.

THIBET ET ALPES HIMALAICAE.—In valle rivuli Jhangkar et ad fauces Jhangkar-la dictas, Walsh; necnon in valle Chumbi 8000-9000 ped. alt.. Searight.

Floret mense Maio. Typi in Herbario Horti Botanici Regalis

Calcuttensis conservati sunt.

Inter Chondrophyllas, ex affinitate G. Haynaldi, Kanitz (G. Rockhillii, Hemsl.), et G. micantis, C. B. Clarke.

Gentiana sororcula.—Planta annua, cæspitosa, omnino glabra, caulibus plurimis aequalibus erectis vel suberectis. Folia radicalia rosulata, ovata, carinata, apice acuta, mucronata, basi obtusa, margine hyalina, 3-nervia, nervis extimis in margine delitescentibus: folia caulina densissima (internodiis tectis), late subulata, per paria connata, in parte inferiori late scariose marginata, 6-10 mm. longa, 1.5 mm. lata, superiora majora. Flores solitarii, in apicibus ramorum, ?lilacini. Calyx tubulosus, quinque-dentatus: tubus 6 mm. longus, 2.5 mm. diametro, dentes versus quinque-carinatus: dentes foliis caulinis similes, 6 mm. longi, sinubus acutissimis. Corollæ tubus 13-14 mm. longus, 2-2.5 mm. diametro, infundibuliformis: plicæ sat conspicuæ: lobi 4 mm. longi, anguste ovati, acuti; plicarum lobuli loborum dimidio æquales, bifidi. Stamina 11-13 mm. longa: filamenta ad tubi dimidiam partem affixa. Capsula elongata, stipite incluso 7 mm. longa.

THIBET.—Nec locus nec collector indicati, 307 partim.

Typus in herbario Horti Botanici Regalis Kewensis conservatus est.

GENTIANA MICANTIFORMIS.—Planta annua, cæspitosa, omnino glabra, caulibus plurimis inæqualibus, suberectis vel fere decumbentibus. Folia radicalia rosulata, late ovata, apice acuta hamata, margine indurata hyalina, 4-6 mm. longa, 3-4 mm. lata, 3-nervia: folia caulina subulata, per paria breviter vaginato-connata, internodiis paullo longiora, margine hyalina, 4-5 mm. longa. Flores solitarii in apicibus ramorum, cœrulei. Calyx tubulosus, quinquedentatus: tubus 4-7 mm. longus, 2 mm. diametro, quinque-lineatus: dentes lanceolati, 3 mm. longi, acutissimi, indistincte carinati. Corollæ tubus 8-9 mm. longus, 2 mm. diametro: plicæ sat conspicuæ: lobi 5, ovati, 2.5-3 mm. longi, 1.5 mm. lati, subclausi: plicarum lobuli bifidi, dentibus inequalibus, 1 mm. longi. Stamina fauces subæquantia: filamenta ad tubi dimidiam partem affixa. Ovarium stipitatum, elongato-ovoideum, corollæ fauces attingens. Capsula matura conspicue exserta stipite 10-12 mm. longo. Semina elongato-ovoidea, longitudinaliter striata, punctata nec reticulata, vix '2 mm. longa.

ALPES HIMALAICE ORIENTALES.—Ultra fines sikkimensi-thibetanos in valle prope urbem Chumbi, Walsh, 16, 60; in regione Phari dicta ejusdem vallis, Dungboo, 4586 partim; in colli supra

hospitium Tangu intra fines Sikkimenses ad 13200 ped. alt., Young-

Species vernalis, maxime ad *Gentianam micantem*, spectat. Typi in herbariis Horti Botanici Regalis Kewensis et Horti Botanici Regalis Calcuttensis conservati sunt.

Inter Chondrophyllas, ex affinitate G. squarrosæ, Ledeb.

GENTIANA BRYOIDES.—Planta annua, omnino glabra, caulibus 1-6 subdecumbentibus. Folia radicalia rosulata, late ovata, apice acuta subhamata, basi obtusa, carinata, margine indurata hyalina, 5-7 mm. longa, 3-4 mm. lata, 3-nervia: folia caulina anguste oblanceolata, per paria vaginato-connata, aliquomodo efflexa, apice acutissima, internodiis breviora vel rarissime æquilonga, 3-4 mm. longa, 1-1.5 mm. lata. Flores solitarii in apicibus ramorum, Calyx tubulosus, quinque-dentatus: tubus 3 mm. longus, 1.5 mm. diametro, nec carinatus: dentes efflexi, ovati, acuti, subcarinati, 1 mm. longi. Corollæ tubus 5-6 mm. longus, 2 mm. diametro: plicæ sat conspicuæ: lobi ovati, 2 mm. longi, 1.5 mm. lati, subclausi: plicarum lobuli vix dimidiam partem loborum æquantes, margine laciniati. Stamina vix fauces attingentes: filamenta ad tubi dimidiam partem affixa. ovoideum, stipitatum. Capsula matura lenticularis, longissime exserta, stipite 15-18 mm. longo. Semina ovoidea, angulata.

ALPES HIMALAICE ORIENTALES.—Prope fines thibetico-sikkimenses supra hospitium Tangu dictum, ad 14500 ped. alt., Young-

husband, 1635.

Inter Gentianam squarrosam, Ledeb., et Gentianam pseudoaquaticam, Kusnezow, et Gentianam crassuloidem, Bur. et Franch., mediam tenens. Typi in herbariis Horti Botanici Regalis Kewensis et Horti Botanici Regalis Calcuttensis conservati sunt.

Gentiana Yokusai — Planta erecto-patens, 2-14 cm. alta, subscabrida. Caulis erectus, 0-4 ramos basales gerens, etiamque 3-8 ramos solitarios caulinos iterum ramiferos. Folia basalia rosulata, ovata, uninervia, in anthesin persistentia, subacuta, ad 22 mm. longa, 8 mm. lata: folia caulina similia at minora, ad 12 mm. longa, 6 mm. lata, acuta, mucronulata, patentia. Flores solitarii, in apicibus ramorum pedicellati, coerulei vel albi. Calycis tubus 5 mm. longus, quinque-cristatus, 2.5 mm. diametro. cristis parvis: dentes lanceolati, cristati, acuti, 2.5-3 mm. longi, Corollæ tubus 8 mm. longus, 3 mm. diametro: plicæ sat conspicuæ: lobi late ovati, obtusiusculi, 2 mm. longi: plicarum lobuli ovati, 2 mm. longi, dentibus perparvis 1-2 instructi. Stamina corollæ tubum excedentia: filamenta ad tubi mediam partem affixa. Ovarium stipitatum, 3-4 mm. longum: stipes 2 mm. longus: stylus 1 mm. longus. Capsula nunc inclusa nunc exserta, ovoidea vel ovoideo-lenticularis, ad 6 mm. longa: semina elongata, striata necpunctata.—G. squarrosa, Forbes et Hemsley in Journ, Linn. Soc. Bot. xxvi, 1890, p. 135, pro parte.

CHINA MEDIA.—In provincia Kwang-tung, sine loco indicato, Wenyon: in provincia Kiangsu ad oppidum Shanghai, Maingay, 424: in provincia Kiangsi ad Kewkiang, Shearer: in provincia Hupeh, sine loco indicato, Henry, 7377; ad Ichang, Henry, 506; ad Chienshi, Wilson, 561: in provincia Szechuen, sine loco indicato, Henry, 8858; ad Liu-hua-tsao, Chung-ching, Bourne; ad oppidum Tachienlu, Pratt, 388; in ripis fluminium Yang-tze-kiang et Min, Fuber, 295.

Var. Japonica.—Folia basalia erectiuscula, exacte lanceolata vel ovato-lanceolata, subacuminata.—Gentiana pedicellata, Yokusai, Somoku Dusets. iv. 64.

Japonia et Corea.—In insula Japonica Nippon, boream versus, Hoggs; in districtu Idzu, ad Shuzenzi, ex herb. Sc. Coll. Imp. Univ., Tokio; in districtu Kutsuke, ad Asamayama, Bisset; in districtu Musashi prope oppidum Yokohama. Dickins: ad Achisihama, Bisset, 855; in montibus centralibus, Maries: regionis Coreæ ad urbem Chemulpo, Carles; et in parte occidentali regionis,  $Wykeham\ Perry$ .

Inter Chondrophyllas ex affinitate G. crassuloidis, Bureau et Franch., et G. myriocladæ, Franch., et G. recurvatæ, C. B. Clarke.

Gentiana Praini.—Planta diffusa, pluricaulis, pluriflora, ad 8 cm. alta, omnino glabra. Caules dichotome pauciramosa purpurei, internodiis quam foliis multo longioribus. Folia basalia subrosulata, sessilia, elliptico-ovata 1-3-nervia, apice obtusa vel rotundata, ad 7 mm. longa, ad 4 mm. lata: folia caulina similia, distantia, apice obtusiuscula, basi paullulo connata. Flores albi, solitarii, ante et post anthesin nutantes. Calyx quinque-sepalus; tubus 4 mm. longus, quinque-angulatus; dentes deltoideo-acuminati, 1 mm. longi. Corollæ tubus 6 mm. longus, fauce 2 mm. diametro; lobi ovati, obtusiusculi, 3 mm. longi, nigro-maculati: plicæ sat conspicuæ; lobuli plicarum inæquilaterales, l'5 mm longi. Stumina in tubi parte inferiore inserta, parte libera 2·5 mm. longa. Ovarium stipitatum. Capsula clavato-lenticularis, exserta, 4-5 mm. longa. Semina elongata, lævia.

ALPES HIMALAICÆ ORIENTALES.—In regionis Sikkim pascuis Pangling dictis, Prainii mercenarius, 20, 121; ad Gnatong, Kingii mercenarius; sine loco indicato, Kingii mercenarius, Prainii mercenarius, 306.

Ex affinitate G. recurvatæ, C. B. Clarke; præcipue differt habitu. Typi ad Shibpur conservati sunt.

Inter Chondrophyllas, ad Gentianam quadrifariam, Blume, spectat.

Gentiana saginoides.—Herba annua, nana, cæspitosa, omnino glabra, caulibus plurimis subæqualibus erectis vel ascendentibus, 2–2.5 cm. alta. Folia radicalia rosulata, anguste ovata, carinata, margine hyalina indurata, apice subacuminata, basi obtusa, trinervia, nervis lateralibus sub apicem evanescentibus, 6–7 mm. longa, 2.5 mm. lata: folia caulina lanceolata, carinata, margine hyalina indurata, apice acutissime acuminata, 3–4 mm. longa, 1 mm. lata, internodiis longiora. Flores solitarii, terminales, ? cœrulei. Calya tubulosus quinquedentatus; tubus 4 mm. longus, vix 1 mm. diametro, sub-carinatus: dentes foliis cauliins similes, 1.5 mm. longi, 5 mm. lati, sinubus subacutis. Corollæ tubus 4 mm longus, tubulosus: plicæ sat conspicuæ: lobi 2 mm. longi, ovati, acuminati; plicarum lobuli loborum dimidio æquilongi, inæqualiter bifidi. Stamina fauces attingentia; filamenta ad tubi dimidiam partem affixa. Capsula sublenticularis, 3 mm. longa, longe stipitata, faucibus exserta.

ALPES HIMALAICAE OCCIDENTALES .- In districtu Kamaon ad

Soonderdhunga, 10000 ped alt., Anderson.

Mense maio floret et fructificat. Habitu formæ alpinæ javanicæ Gentianæ quadrifariæ a cel. Koodersio descriptæ (Naturkundig Tijdschrift van Ned. Indie ix., 1906, p. 258) similis est. Typus in Herbario Horti Botanici Regalis Calcuttensis conservatus est.

Inter species sectionis Comastomatis maxime G. tenellæ, Fries, affinis.

Gentiana Duthiel.—Herba nana, erecta, simplicicaulis, uniflora vel biflora, omnino glabra, 2-4 cm. alta. Folia radicalia 2 vel 4, spathulata, 2 mm. longa, vix 1 mm. lata, herbacea: folia caulina lanceolata, acuta, minutissime aspera, oculo nudo enervia, ad 4 mm. longa, ad 1-5 mm. lata, internodiis permulto breviora. Flores? lilacini. Calyx brevissime infundibularis, quadrisepalus, minutissime asper: infundibulum 1 mm. longum, ecarinatum: lobi lanceolato-ovati, exacte acuti, 3 mm. longi, 1-5 mm. lati, basin versus angustati. Corollæ tubus 4 mm. longus, tubuliformis, nec plicatus, faucibus glaber; lobi 4, ovati, obtusi, 2 mm. longi. Stamina paullulo infra fauces inserta; filamenta brevia, 1-1.5 mm. longa; antheræ fauces attingentes. Ovarium elongato-ovoideum, 3-3.5 mm. longum: stylus perbrevis, vix distinguendus.

ALPES HIMALAICE OCCIDENTALES.—In regione Tehri-Garhwal ad viculum Chinpul, infra monte Bandarpunch 12000—13000 ped. alt., Duthie, 461.

Floret mense Augusto. Forsan G. tenellæ varietas est. Typi in Herbariis ad Shibpur et Saharanpur conservati sunt.

Inter species sectionis Crossopetali.

Gentiana detonsa, Rottb., var. ovato-deltoidea.—Folia caulina ovato-deltoidea. G. detonsa, Rottb.; Forbes et Hemsley

in Journ. Linn. Soc. Bot. xxvi, 1890, p. 127, pro parte.

CHINA MEDIA ET BOREALIS.—In provincia Hupeh occidentalis, Wilson, 2551; prope oppidum Hsingshan, Henry, 6522A; prope oppidum Paokang, Henry, 6522: in provincia Kansu orientem versus, Potanin.

Typi in Herbario Horti Regalis Botanici Kewensis conser-

vati sunt.

Gentiana detonsa, Rottb., var. Lutea.—An varietas, an species distincta? *Foliis* varietati *Stracheyi*, C. B. Clarke, similis; pedicello breviori etiamque floribus luteis differt.

CHINA AUSTRALIS.—In provincia Yunnan, ad oppidum Yun-

nanfu, Ducloux, 234.

Typus in Herbario Horti Botanici Kewensis conservatus est.

Inter Ophelias, ex affinitate S. purpurascentis, Wall., et præcipue S. pubescentis, Franch.

SWERTIA CINCTA.—Herba 80-100 cm. alta, ramosa. Caulis stramineus, fistulosus, indistincte quadri-lineolata. Folia lanceolata, petiolata, acuta, basin versus attenuata: lamina ad 8 cm. longa, ad 10-12 mm. lata, ad anthesin infima delapsa: petiolus ad 10 mm. longus. Flores nutantes, pedicellati. Calycis hirsuti tubus 2 mm. longus: lobi anguste ovati, 9 mm. longi. Corollæ tubus perbrevis, 1 mm. longus: petala ovata, tenuissima, sepalis paullo longiora, 8-9 mm. longa, 5-6 mm. lata, uni-foveolata supra foveolam maculis tribus notata: foveola subrotunda, calva, ad fauces corollæ posita. Stamina 6-7 mm. longa: filamenta e basibus latis cyatham formantibus lanceolato-acuminata. Ovarium breviter stipitatum, stipite 1 mm. longo, elongato-ovoideum: stylus 15 mm. longus: stigmata brevia. Semina plurima. Swertia purpurascens, var., violaceo-cincta, Franchet in Bull. Soc. Bot. France, xlvi, 1899, p. 34.

China australis.—In provincia Yunnan ad oppidum Yunnan-fu, Ducloux, 318; ad Yuanchang, 7000 ped. alt., Henry, 13216:

ad pedes monti Maeulchan, Delavay, 4269.

Typi in Herbariis Horti Botanici Parisiensis et Horti Botanici Regalis Kewensis conservati sunt.

Inter Ophelias, maxime ad S. Chiratam, Ham., spectat.

SWERTIA TONGLUENSIS.—Herba habitu Swertiæ Chairatæ persimilis, ad 25 cm. alta vel forsan altior, omnino glabra. Radix brevis, oblique terram penetrans. Caulis singulus, erectus, in parte [superiori ramosus, rotundato-quadrangularis, anguste

quadri-angulatus, alis per paria approximatis. Folia infima in anthesin delapsa: folia media ovato-elliptica, vix connata, sessilia, ad 5 cm. longa, ad 2 cm. lata, apice obtusa, internodiis longiora, 5-7-nervia: folia superiora deltoideo-ovata, quinque-nervia, internodiis breviora: folia suprema fere lanceolata, parva. Flores tetrameri in paniculam racemiformem ter et iterum ramosam dispositi, vix conspicui, pedicellis 5-10 mm. longis filiformibus. Sepala oblanceolata, libera, ad 5 mm. longa, nec patentia. Corollæ tubus 1-15 mm. longus: petala sepala paullulo excedentia, 3-4 mm. longa, ovata, subacuta, bi-foveolata, ad medium lineolata: foveolæ approximatæ, ovatæ, marginibus basali excepto membrana longe fimbriata cinctæ. Staminum filamenta basin versus paullulo expansa, inter lobos corollæ ad os tubi annexa: antheræ versa-Ovarium ovoideum, 3 mm. longum: stylus brevis: stigmata antheras attingentia. Capsula matura plerumque nutans, distincte ex calyci exserta, aliquomodo rostrata, ad 8 mm. longa, purpureo-nigra. Semina aurantiaca, subglobosa, testa minutissime rugulosa.

ALPES HIMALAICE ORIENTALES.—In regione Sikkimensi vel in districtu Darjeeling sine loco indicato, Kurz, King; in districtu Darjeeling ad fines nepalenses in cacumine montis Tonglu ad 10000 ped. alt., T. Thomson, C B. Clarke, Burkill; in declivitate montis Tonglu versus orientem ad 9000 ped. alt., T. Thomson.

Typi in Herbariis Hortorum Botanicorum Regalium ad Kew et ad Calcuttam conservati sunt. Floret tempore pluvio in mense Augusti vel Septembri. Flore et habitu Swertiæ Chiratæ Ham., similis est: capsulis longioribus et caulibus alatis differt.

#### Inter Ophelias ex affinitate S. puniceæ, Hemsl., et S. longipedis Franch.

SWERTIA YUNNANENSIS.—Planta erecta, ramosa, multiflora, ad 25 cm. alta, glabra. Caulis subquadrangularis, stramineus. Folia linearia, ad 25 mm. longa, 1–2 mm. lata, basi connata, subpetiolata, apice acuta, ima minima ad anthesin decidua. Flores pallide lilacini, sat conspicui, pedicellati pedicellis filiformibus. Sepala quinque, filiformia, ad 7 mm. longa, patentia. Petala 8–9 mm. longa, lanceolato-ovata, acuta, bi-foveolata: foveola quæque squama 3–4-dentata tecta. Stamina 3–4 mm. longa. Ovarium elongatum, staminibus paullo longius: stigmata in ovario sessilia.

China australis.—In provincia Yunnan ad oppidum Mengtze in montibus herbosis ad 6000 ped. alt., *Henry*, 9293A, *Hancock*, 7.

Floret mense Novembri. Typi in Herbario Horti Botanici

Regalis Kewensis conservati sunt.

Swertia Hickinii.—Planta erecta, pauci-ramosa, ad 35 cm. alta, glabra. Caulis quadrangularis, purpurascens. Folia lanceolata, subpetiolata, ad 20 mm. longa, ad 6 mm. lata, acuta, uninervia; infima minima, ad anthesin decidua. Flores ad 25, inter

Ophelias conspicua, pedicellati. Sepala quinque, lineari-lanceolata ad 6 mm. longa, 1-1.5 mm. lata. Petala lanceolata, acuta, 6-9 mm. longa, bifoveolata: foveolæ fere ad petalorum bases positæ, unguiculiformes, pilis 1-2.5 mm. longis marginatæ præcipue ad marginem superiorem. Stamina 6 mm. longa. Ovarium ovoideum, staminibus æquilongum: stigmata sessilia.

CHINA MEDIA -- In provincia Chekiang, Hickin.

Typus in herbario Horti Botanici Regalis Kewensis conservatus est.

#### Inter Ophelias distinctissima.

Swertia hispidicalyx.—Planta annua, hispida præcipue in sepalis. Caules subquadrangulares, 5-15 cm. alta, sat foliosa. Folia anguste ovata vel lanceolata, subamplexicaulia, sæpe marginibus revoluta, 10-15 mm. longa, 2-4 mm. lata, rara ad 20 mm. longa et 8 mm. lata, uninervia, marginibus in angulas caulis decurrentibus, apice acutissima. Flores in apicibus internodiorum ad 5 cm. longorum producti, pallide lilacini. Sepala libera, ovata, acuta, hispida, 4-7 mm. longa, 2-4 mm. lata. Corollæ tubus perbrevis: lobi ovati, acuti, biglandulosi, 6-8 mm. longi, 4-5 mm. lati, basin versus pili pauci gerentes. Stamina æqualia: filamenta ad fauces inserta 5-6 mm. longa: antheræ versatiles, evertæ. Ovarium angustum: stylus longus: stigmata antheras paullo superantia.

THIBET.—Sine loco indicato, mercenarius Kingianus, 311, 369, 1633; urbis Lhasa boream verus in faucibus Phembu-la dictis, Walton, 1608; et orientem versus in valle fluminis Kyi-chu, Walton,

1159.

Var. Major.—Planta ad 18 cm. alta, glabrior. Flores forsan albi. Ovarium ovoideum.

THIBET.—Ad castrum Gyang-tse, Walton, 1609.

Var. MINIMA.—Planta diffusa, glabra, 4-6 cm. alta. Stylus subnullus.

Thibet.—Prope fines sikkimenses ad castrum Khamba-jong dictum, Younghusband, 293.

Inter Ophelias, ex affinitate S. angustifoliæ, Ham., et S. corymbosæ, Wight.

SWERTIA EXACOIDES.—Herba robusta, erecta, pluriflora, ut videtur ad 15 cm. alta, glabra. Caulis 3-4 mm. diametro, quadrangularis, viridis, angulis minopere alatis. Folia ovata, ad 5 cm. longa, ad 25 mm. lata, basi libera sessilia, apice obtusa vel acutiuscula. Flores in paniculam latam laxam dispositi, testemercenario rubri (ut crederem lilacini), sat conspicui, pedicellati, pedicellis fere filiformibus. Sepala quattuor, naviculari-lanceolata,

ad 6 mm. longa, patentia. Petala 7-9 mm. longa, ovata, subacuta, unifoveolata, supra minutissime puberula; foveola squama operculata, foveolæ margine superiori densissime brevissime tentaculato etiam squamæ margine tentaculato. Stamina 3-4 mm. longa. Ovarium staminibus paullo longius: stigmata in ovario sessilia. Capsula matura 10 mm. longa: semina permulta, fere sphærica, minutissime punctata.

BURMA ORIENTALIS.—In montibus shanicis ad castrum Fort

Stedman, Abdul Huk, Kingii mercenarius.

Typus in Herbario Horti Botanici Regalis Calcuttensis conservatus est. Floret mense Novembri. Maxime ad S. angustifoliam, varietatem pulchellam accedit.

SWERTIA PAUPERA.—Herba gracilis, erecta, nec ramosa, pauciflora, 10-15 cm. alta, glabra. Caulis tenuis, subquadrangularis, stramineus. Folia ima anguste elliptica: alia linearia ad 2 cm. longa, internodiis dimidio breviora, 1 mm. lata, basi libera sessilia, apice acuta. Flores 4-12, laxe cymosim dispositi, albidi, sat conspicui, pedicellati, pedicellis filiformibus. Sepala quattuor, naviculari-lanceolata, ad 4 mm. longa, patentia. Petala 7-8 mm. longa, ovata, subacuta, unifoveolata: foveola squama operculata, margine superiori et squame margine inconspicue minutie tentaculatis. Stamina 3-4 mm. longa. Ovarium elongatum, staminibus æquilongum vel paullo longius: stigmata in ovario sessilia.

BURMA.—In districtu Mandalay versus Maymyo in terris pinguibus montium shanicorum, Badal Khan, Kingii mercenarius,

281.

Typus in Herbario Horti Botanici Regalis Calcuttensis conservatus est. Floret mense Novembri. Ad Swertiam angustifoliam, var., pulchellam accedit: distinguitur jam prima scrutatione habitu et foliis.

### Inter Pleurogynes distincta.

SWERTIA SIKKIMENSIS.—Planta subcæspitosa, ad 12 cm. alta, omnino glabra, multiflora. Rami straminei, apicem versus subquadrangulares, quisquis sex pares foliorum gerens. Folia anguste lanceolata vel fere linearia, sicco marginibus recurvis, acuta, sessilia, internodiis æqualia vel paullo longiora vel paullo breviora, ad 2 cm. longa, ad 5 mm. lata, at enim pleraque 2-3 mm. lata, uninervia. Flores pallide cœrulei inter Pleurogynes mediam tenentes, pedicellati: pedicelli filiformes. Calycis tubus 1 mm. longus: lobi lineares, 7 mm. longi, acutissimi, uninervia. Corolla 10-12 mm. longa in alabastro et post anthesin anguste voluta: lobi ovati, acuti, bicolores. Stamina 4-5 mm. longa, ad corollæ tubi basin inserta. Quarium staminibus æquilongum : stigmata in tertia parte suprema decurrentia Capsula matura petalis, æquilonga.—Pleurogyne sikkimensis, Burkill in Herb. Kew. ALPES HIMALAICE.—Regionis Sikkim in monte Kinchinihow. [N.S.]

ad 16000 ped. alt., Hooker, etiamque ad 17000 ped. alt., Gammie; ad Tangu in valle fluminis Lachen, Hooker, Prain; ad Yeumtong in valle fluminis Lachung, Hooker; ad Samdong viculum (nescioquem) in Sikkim superiore, Hooker; ad viculum Giagong, Prain; ad Nyi prope Toku, Kingii mercenarius; ad Jongri 13500-15000 ped. alt., T. Anderson: prope fines districtus Darjeeling ad Phallut, Kurz. Regionis Bhutan ad viculum Kungmet, Dungboo, 295. In regione Kunawar, Vicary.

Inter Pleurogynes, ex affinitate S. brachyantheræ, Knoblauch, et S. Clarkei, Knoblauch.

Sweetia chumbica.—Planta ad 10 cm. alta, omnino glabra, diffuse ramosa, ramis plerisque solitariis nec per paria productis. Caules rigidi, tenuissimi. Folia obovata, petiolata vel subsessilia, 5–8 mm. longa, 3 mm. lata, uninervia. Flores solitarii, ad apices internodiorum 2–5 cm. longorum producti. Calyx quinque-sectus, 3–3.5 mm. longus: sepala obovato-spathulata. Corollæ cœruleæ tubus perbrevis, 1 mm. longus; lobi lanceolato-ovati, 5 mm. longi, 3 mm. lati, modo S. carinthiacæ bicolores. Stamina ad basin petalorum affixa: filamenta 2 mm. longa: antheræ versatiles. Ovarium sessile, elongato-ovoideum, filamentis æquilongum: stigmata ad ovarii mediam partem decurrentia. Pleurogyne chumbica, Burkill in Herb. Kew.

ALPES HIMALAICÆ ORIENTALES.—Ultra fines sikkimensi-thibetanos sine loco indicato, mercenarius Kingianus, 308 partim; in valle urbis Chumbi ad Tah-loom, mercenarius Kingianus 581. In regione Sikkim sine loco indicato, Cave, 2028, 4252; ad Hewlahangi, Prainii mercenarius, 200. In regione Nepal versus fines sikkimenses ad paludem Moza pokhri prope fauces Kangla, Kingii mercenarius.

Floret mense Augusti. Typi in herbariis Hortorum Botanicorum Regalium ad Kew et Calcuttam conservati sunt.

Inter Pleurogynes, ex affinitate S. carinthiacæ, Griseb.

SWERTIA LLOYDIOIDES.—Planta ad 14 cm. alta, erecta, omnino glabra. Caulis e radice singulus, parum ramosus, castaneus, nitens. Folia oblanceolata, sessilia 8-10 mm. longa, 3 mm. lata, uninervia. Flores solitarii, ad apices internodiorum longorum producti. Calyx quinque-sepalus: sepala lineari-lanceolata, 5 mm. longa, 1 mm. lata. Corollæ tubus perbrevis, 1 mm. longus: lobi 8-10 mm. longi, modo S. carinthiacæ bicolores. Stamina dimidio petalorum æquilonga. Ovarium staminibus multo longius, 8 mm. longum, sessile: stigmata fere ad basin decurrentia. Capsula matura petalis æquilonga. Pleurogyne lloydioides, Burkill in Herb. Kew.

THIBET.—Prope fines sikkimenses, ad castrum Khamba-jong, Prain, 1637. SWERTIA CARINTHIACA, Griseb., var. AFGHANICA.—Planta ad 10 cm. alta, multicaulis. Flores longissime pedicellati. Swertia sp., Griffith, Posthumous papers, ii., 1848. p. 306, no. 1050.

Afghanistania.—Ad pedes montis Hajiguk, 11400 ped. alt.,

Griffith, 1050.

Tres varietates habet Ple rogyne carinthiaca: una typica europæa sic crescit ut folia omnia subradicalia sint, caulibus erectis: secunda, var., stelleriana, Griseb., planta diffusa est, et folia ejusdem partim subradicalia partim caulina sunt: tertia var. afyhanica, a varietati stelleriana distinguiter pedicellis longissimis. Varietas americana pusilla, A. Gray, nil nisi stellerianæ forma est.

SWERTIA DELTOIDEA.—Planta ad 25 cm. alta, erecta, omnino glabra. Caulis subquadrangularis, purpureo-castaneus, foliorum pares 6-10 gerens et enim ramos fere tot quot folia. Folia deltoideo-ovata, sessilia, basalia ad anthesin delapsa, media ad 15 mm. longa ad 10 mm. lata, acuta, mucronulata, nervis 3 inconspicuis, internodiis 3-4-plo breviora. Flores conspicui, numerosi, ad apices pedicellorum 1-15 cm. longorum positi. Sepala quinque, 8-10 mm. longa, lanceolata, acuta, fere apicem versus carinata. Corolla calyci duplo longior: tubus perbrevis: lobi-ovati, acuti, fere acuminati, modo S. carinthiacæ bicolores. Filamenta 6-7 mm. longa. Ovarium antheras æquans: stigmata ad ovarii mediam partem descendentia. Pleurogyne deltoidea, Burkill in Herb. Kew.

CHINA OCCIDENTALIS ET MONGOLIA.—In provincia Chinense Szechuen, inter oppida Tachienlu et Chentu, Hosie; et ad Tachienlu, Farges, Mussot. In Mongolia prope Urga, Campbell.

## Inter Pleurogynes distincta.

SWERTIA GAMOSEPALA.—Planta diffuse ramosa, ad 14 cm. alta, omnino glabra. Caulis foliorum pares 4-6 gerens et ramos tot quot folia, purpureo-castaneus: rami erecto-patentes. Folia sæpissime obovata, 12 mm. longa, 5 mm. lata, sessilia, apice obtusiuscula vel infima rotundata, uni-nervia, internodiis 3-8-plo breviora. Flores longe pedicellati, sat conspicui. Calycis tubus 2-3 mm. longus: lobi lanceolato-ovati vel ovati, obtusi vel apice rotundati, 3-4 mm. longi, uni-nervii nervis conspicuis. Petala calyci duplo longiora, ovata, acuta, bicolores: tubus perbrevis. Stamina 7-8 mm. longa. Ovarium 4-7 mm. longum: stylus 1-3 mm. longus: stigmata apicalia, nec decurrentia. Pleurogyne gamosepala, Burkill in Herb. Kew.

CHINA OCCIDENTALIS.—In provincia Szechuen, inter oppida Tachien-lu et Chentu, Hosie, etiamque ad Tongolo, Soulié, 682, et

ad montes Tcha-to-Shan prope Tongolo, Soulié, 345.

Typi in Herbariis Horti Botanici Regalis Kewensis et Horti Botanici Parisiensis conservati sunt. Par videtur speciem hanc Vol. II, No. 7. Gentianacearum Species Asiaticæ. [N.S.]

Swertiam, sectionem Pleurogynen, nominare quod stigmatibus lateralibus exceptis characteres generis habet.

#### Inter Swertias distinctissima, et sectionem novam nomine Stapfianam proposui.

Swertia Stapfii.—Planta nana perennis, ad 6 cm. alta, omnino glabra. Rhizomu tenue, horizontale, scariosum, radicans. in caulem floriferam (flore singulo) ascendentem transeuns, et rhizoma novum ex axillo folii cujusquam inter inferiora gerens. Caulis floriferus obcure quadrangularis, internodiis plerisque foliis subæquilongis. Folia 8-10, late spathulata, per paria vix vel brevissime vaginato-connata, ad 12 mm. longa et 6 mm. lata. Flores conspicui, ante anthesin nutantes, aperti 3 cm. diametro. Sepala 5, crassiuscula, inequalia, lanceolata vel lanceolato-ovata, apice rotundata, basi parum inter se conjuncta, 7-9 mm. longa, 2-3 mm. lata. Corollæ tubus 1-2 mm. longus. Petala obovata, apice rotundata, 18-20 mm. longa, 8-9 mm. lata, 7-nervia, bifoveolata, foveolis sub-basalibus membrana parva pectinatofimbriata pileatis. Stamina ad tubi marginem inter lobos inserta: filamenta filiformia, 10-12 mm. longa: anthere versatiles, 3 mm. longæ. Ovarium elongatum, 12-15 mm. longum : stigmata apicalia vix decurrentia. Swertia n. sp., Stapf. MS. in Herb. Calc.

THIBET AUSTRALIS.—Sinc loco indicato, mercenarius Kingianus

.332, 334.

#### Inter Eu-swertias distincta.

SWERTIA YOUNGHUSBANDII.—Planta erecta, unicaulis, 3-22 cm. alta, glabra. Caulis stramineus. Folia plurima radicalia, 2-4 caulina lanceolata, inferiora subsessilia vel petiolata, caulina sessilia, 1.5-3 cm. longa, 3-6 mm. lata, acuta. Flores in apicibus pedunculorum longorum producti. Sepala lineari-lanceolata, acutissima, 10-14 mm. longa, 1.5-3 mm. lata. Corollæ tubus luteæ perbrevis, 15 mm. longis: lobi 15-18 mm. longi, anguste ovati, ad marginem exteriorem viridi-lutei, infra bi-glanduliferi, longe fusco-barbati. Stamina ad corollæ tubi basin inserta: filamenta 8-10 mm longa: antheræ versatiles, lividæ. Ovarium elongatoovoideum, 5 mm. longum: stylus nullus.

THIBET.—Ultra fines sikkimensi-thibetanos sine loco indicato mercenarius Kingianus, 1632; ad castrum Khambajong, ad 15000

ped. alt., Prain 1622, Younghusband, 297.

## Inter Eu-swertias, ex affinitate Swertiæ marginatæ, Schrenk.

SWERTIA SOULIEI.—Planta erecta, ad 12 cm. alta, glabra. Collis ob foliorum delapsorum basibus brunneus. Caulis singulus. stramineus. Folia quattuor basalia obovata, petiolata, recurva, apice obtusa, basin versus longe angustata, 3-5-nervia, ad 5 cm. longa, ad 1 cm. lata: petiolus ad 1 cm. longus: folia caulina duo, paria, elongato-ovata, acuta, sessilia, ad 2 cm. longa, ad 8 mm. lata. Flores, 5-7, pedicellata: bracteæ imæ foliis caulinis similes at paullo minores. Sepala lanceolata, libera, acutissima, uni-nervia, ad 1 cm. longa. Petala lanceolata, 12-14 mm. longa, acutiuscula, bi-foveolata: foveolæ pilis 3 mm. longis cinctæ. Stamina 6 mm. longa. Ovarium 4 mm. longum: stylus 1 mm. longus. S. marginata, Franchet in Bull. Soc. Bot. France xlvi, 1899, p. 312.

CHINA OCCIDENTALIS.—In provincia Szechuen ad oppidum

Tachien-lu, Soulié, 614.

Typus in herbario Horti Botanici Parisiensis conservatus est.

Swertia subspectora.—Planta 12 cm. alta, glabra, erecta. Caulis singulus, apicem versus subquadrangularis. Folia subradicalia quattuor, elliptico-ovata, longa per paria vaginato-connata, petiolata, basin versus angustata, apice obtuse rotundata, 7-nervia: lamina 4-5 cm. longa, 15-18 mm. lata: petiolus 2-4 cm. longus. Folia caulina desunt. Flores ad 10, aggregati, bracteæ imæ magnæ, deltoideo-ovatæ, 1-nerviæ, 15 mm. longæ, 6 mm. latæ, acutiusculæ: pedicelli ad 1 cm. longi. Sepala anguste lanceolata, acuta. Petala obovata, 15 mm. longa, 6 mm. lata, obtusa, bi-foveolata; foveolæ marginatæ pilis in margine superiori brevibus in marginibus aliis longiusculis: series pilorum etiam brevium supra filamentorum insertiones videtur. Stamina ad petalorum bases inserta, 8 mm. longa. Ovarium ovoideum, 7 mm. longum: stigmata subsessilia.

CHINA OCCIDENLALIS. - In provincia Szechuen inter oppida

Batang et Tachien-lu, Hosie.

Typi in herbio Horti Botanici Regalis Kewensis conservati sunt.

SWERTIA SPECIOSA, Wall., var. LACEI.—Planta erecta, multiflora, strictior, habitu S. punctatæ, Baumg., similis. Folia caulina inferiora internodiis longiora, lanceolato-ovata, acuta. Flores iis

S. speciosæ typicæ paullo minores.

ALPES HIMALAICE OCCIDENTALES.—In regione Chamba ad fauces Sach dictos, 11000 ped. alt., Lace, 1221; in regione Kashmir ad Gulmarg, 8000-9000 ped. alt., Duthie, et ad fauces Lowari dictos, 9000 ped. alt., Gatacre, 17336; in districtus Hazara valle Khaghan ad 9000 ped. alt., Inayat, 19948.

## Postscriptum.

Nuper mihi repatriato ad valetudinem recuperandam circa Gentianaceas præcipue Gentianinas asiaticas investigare occasio data fuit: atque apud Londinium, ubi mihi D. Prain benevolenter specimines multos thibeticos præbuit, iterum in herbario Kewense et in Museo Britannico laborare licuit. Ex Londinio ad Lutetias

Parisiorum transivi, et permultas plantas Chinenses aliasque inspexi. Postea in Indiam reditus collectiones amplas in hortis regalibus ad Shibpur, prope Calcuttam, et ad Saharanpur examinavi, et simulac collectionem Caroli A. Barber benigne commissam ex India meridionali.

Nunc ut mox dissertationem majorem de distributione geographica per terras asiaticas omnium Gentianinarum facilius proponere possim, discriptiones elaboratas novarum specierum

præcedentes edidi.

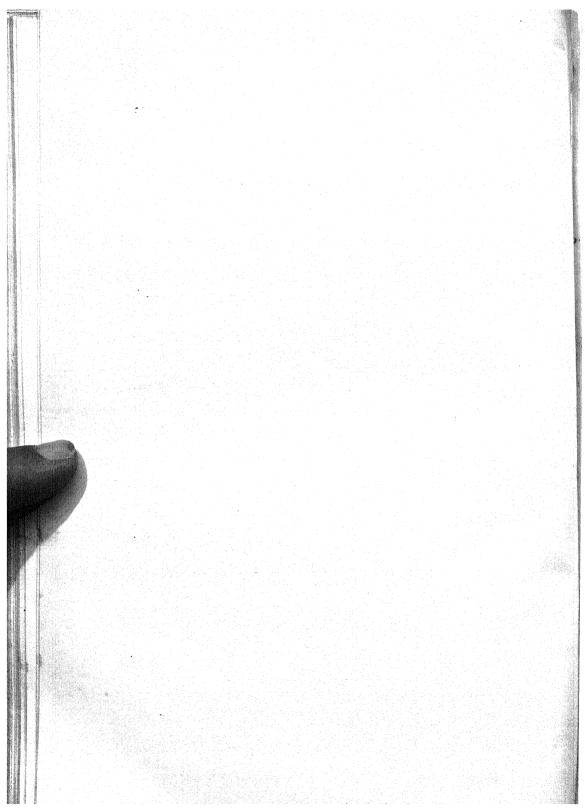
Restat ut illis amicis (D. Prain, W. B. Hemsley, J. F. Duthie, S. le M. Moore, E. G. Baker, A. Finet, A. T. Gage, C. A. Barber, H. Martin Leake) qui mihi in hoc opere auxilio fuerunt, gratias justas et maximas agam.

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42. Swertiam novam japonicam ex affinitate Swertiæ tetrapteræ, Maxim., descripserunt Spencer Le M. Moore et I. H. Burkill.

SWERTIA BISSETI. Herba verisimiter annua, ultra-spithamea, Caulis erectus, rariramosus, paucifoliatus, obtuse quadriangulatus: ramuli ascendentes. Folia sessilia, oblongo-lanceolata, obtusa, basi levissime cordata, ut videtur tri-nervia, crassiuscula, omnia speciminis unici solummodo obvii opposita, modice 1-2 cm. longa et 5-6 mm. lata, in sicco olivacea subtus pallidiora. Flores (? lutei) tetrameri, in corymbis brevibus sublaxis plurifloris ramulos coronantibus digesti, humectati circa 8 mm. diametro: pedicelli gracillimi, quam flores sæpissime longiores, 5-10 mm. longi. Calycis lobi lanceolati, acuti, 4 mm. longi. Corollæ tubus 1 mm. longus: lobi oblanceolato-oblongi, obtusissimi, 6 mm. longi., medium paullulo infra uni-foveolati; foveola glandulosa ovata, supra distincte marginata, infra evanescens, circa '75 mm. longa: Filamenta omnino filiformia, apicem versus levissime attenuata, 3 mm. longa: antheræ ovato-oblongæ, 1.2 mm. longæ, connectivo brevissime producto: loculi inter se paullulum inæquales. Ovarium oblanceolato-oblongum, 4 mm. longum: stylus nullus: stigmatis lobi lineares, 5 mm. longi. Capsula ignota.

Japonia, in insula Yezo (V. E. Kinch ex J. Bisset). Typus in Herbario Musei Britannici conservatus est.



#### 43. Anthropological Supplement.

#### 1. An old Reference to the Bhotias.

Father Rodolfi Aquaviva, in a letter to the General of his Order, dated April 1582, states that he and his colleagues had discovered a new nation of Gentiles called Bottan, situated beyond Lahore and towards the river Indus. They were a nation very well inclined and given to good works. Moreover they were white men and there were no Mahommedans among them. It was to be hoped therefore that if the Fathers of an apostolic fervour were sent among them, there would be a great harvest of Gentiles. Italian of this letter is to be found in Bartoli, p. 48, ed. Piacenza, 1819, and there is a translation by General Maclagan in his paper on Jesuit Missions, in our Journal for 1896, p. 55. General Maclagan apparently supposes that Bottan is the same as Pathan, and refers in a note to a description of a Cabul tribe by Father Monserrat in the Orienta Conquista. Apparently the passage he refers to is that which appears in the Bombay reprint of 1886 as Conquista I, Division II, of the second volume No. 63 and p. 104. He also remarks that in the books of the period there seems to be some confusion between Pathans and Bhutanis. But Bottan cannot be Pathan, for the people were Hindus and not Mahommedans. I submit, therefore, that the Bottanese of Aquaviva must be the Bhotias of Almora and British Garhwal described in a recent Memoir of our Society by Mr. Sherring. It is true that the locality as described by Aquaviva does not agree, but he may have easily been mistaken on this point. Possibly too by "beyond Lahore" he meant further from Italy, i.e., to the north-east of Lahore, and by the Indus he may have meant one of its tributaries. If his Bottan is the same as Bhotia, his reference is interesting as perhaps the earliest European reference to the tribe. He may, however, simply have meant the Tibetans.

H. BEVERIDGE.

# 2. Note on a Quatrain of 'Umar-i-Khayyam.

The following quatrain is chanted by dervishes in Persia at the gates of great people as a warning against pride. A musician informs me that in accordance with the usual Oriental practice, the singer modifies the air reproduced below, by means of an endless variety of "grace-notes," in a manner which it would be impossible to indicate on the written score without overloading the simple "motives" beyond recognition.



زاعی دیدم نشسته در بارهٔ طوس . در پیش نهاده کلهٔ کیکاؤس با کلههمی گفت که افسوس افسوس . کو رستم و کیقباد کو کیکاؤس

I saw a raven seated on the walls of Tūs, Before it lay the skull of Kaikā sūs; To the skull it kept saying, "Afsūs! Afsūs! Where is Rustam, where Kaiqubād, where Kaikā sūs?"

In Whinfield's 'Umar-i-Khayyam, this quatrain (No. 277) reads:—

موغى ديدم نشسته در بارهٔ طوس .. در بيش نهاده كلّهٔ كيكاؤس باكلّه همي گفت كه افسوس افسوس .. كو بانگ جرسها وكجانالهٔ كوس

"I saw a bird perched on the walls of Tūs, Before him lay the skull of Kai Kawús, And thus he made his moan, 'Alas, poor king! Thy drums are hushed, thy 'larums have rung truce.'"

D. C. PHILLOTT.

### 3. A Persian Nonsense Rhyme.

Persians delight in mimicry, and the following clever non-sense, impossible to translate satisfactorily, was composed by an  $\overline{Akh}\overline{u}nd$ , a friend of the present writer, in ridicule of the sermons of certain learned divines. A Persian preacher, who has any claims to scholarship, first delivers a sentence in Arabic, and then translates it into Persian, mouthing the words and speaking with an exaggerated accent: more attention is paid to rhyme and alliteration than to sense:—

ديروز گذشته خدمت اقايان گوام عرض شد چذين است بچه زاغ زاغ ; كُرّة خو اللاغ ; قلي ل رأن اسپ وكيل الملك داشت داغ ; جائي كدسبزة زار

I I have failed to discover the meaning or allusion of Quli-yi rān.

است راغ ; در دست مي خواران است اياغ ; در خانهٔ همه كس است چراغ ; در صورت ا انسان است دماغ ; در پلی زنهاست دُلاغ ٤ ــ اما اين مسجد است نه كليسا و اين دانه خانه خدا است نه معبد ترسا \*

D. C. PHILLOTT.

#### A Note on the Mercantile Sign Language of India.

In the open-air markets of India, where idle spectators are by ancient custom entitled to increase the noise and confusion of bargaining, secrecy in dealing would be impossible were it not for some simple code of manual signs known to all Indian brokers and merchants. The signs are simple and distinctive, and mistakes are hardly possible. Suppose, for instance, it is a horse that is to be bargained for at a fair: the unit in this case would be a hundred The buyer and seller extend their right hands, over which one of them casts a concealing handkerchief or the end of his coat or pagri. The seller will, of course, at first indicate an exhorbitant figure; the buyer, one much lower than he intends to give. If the difference between the two sums is very great, it is usually an indication that the negotiations will terminate abruptly. Now, suppose that the buyer wishes to offer Rs. 266; he grasps the forefinger and the second finger of the seller's hand to express two units or two sums of a hundred rupees. He next doubles up the third finger to express half the unit, or rupees fifty: total Rs. 250. The value of the fingers now drops from Rs. 100 to Rs. 10: he, therefore, to add ten to the figure expressed, grasps the forefinger and makes the price Rs. 260. The second finger doubled up adds half, or Rs. 5, and makes the sum Rs. 265. The value of the fingers now drops from ten to one: he, therefore, grasps a forefinger and makes the price Rs. 261.

The bystanders, though in complete ignorance of the sums asked and refused, take an active part in the proceedings and champion the cause of the buyer—at least if the buyer be a Sahib. "Ghar kā dushman, enemy of your own house," they say to the seller, "why don't you sell?"

Mules are, in the Panjab, generally owned by Khatris; so when it is a mule that is being bargained for, the proceedings are prolonged and the excitement sometimes becomes excessive. The seller is thumped violently on the back, and pushed and shaken till he breaks away in a huff. He is then forcibly brought back, sulky and frowning, and made to extend his hand and continue the negotiations. When the bargain is concluded he breaks into smiles. Apparently everybody has been acting a part and thoroughly enjoying it.

The code described above is known to horse-dealers through-

out the Panjab, and probably throughout India.

Amongst jewellers, cloth merchants, and perhaps other trades, there are variations in the code. Amongst them also, a single finger signifies a unit of one, ten, a hundred, or a thousand rupees. If the unit be one rupee, the words "Yih rupiya hai" are said as the finger or fingers are grasped: if the unit be ten, "dahā,ī"; if a hundred, "sau": if a thousand, "hazār." Half a unit is expressed by extending a forefinger along the palm of the other person's hand: thus to indicate Rs. 15 the dealer would first express Rs. 10 by grasping one forefinger and exclaiming "dahā,ī," and then would either extend his forefinger along the other's palm to indicate half or Rs. 5, or else grasp all five fingers of the other's hand to express the same number. The lowest fraction is four annas, which is called māsha. To express Rs. 1-8 the dealer would grasp a forefinger saying, "Yih rupiya hai," and then grasping the forefinger and second finger say, "Yih masha." Fractions of four annas each are also expressed by pressing between the forefinger and thumb the joints of the other bargainer's forefinger. Thus the first joint, when so pressed, indicates four annas, the second joint eight annas, and the base of the finger twelve annas.

How far has this or a similar code spread? Is it known in Central Asia, or indeed anywhere beyond Indian limits? It may be known in some of the parts of the Persian Gulf, but it is not known in the interior, neither to Arabs nor to Persians. Even the

Arab horse-dealers who visit Bombay do not employ it.

D. C. PHILLOTT.

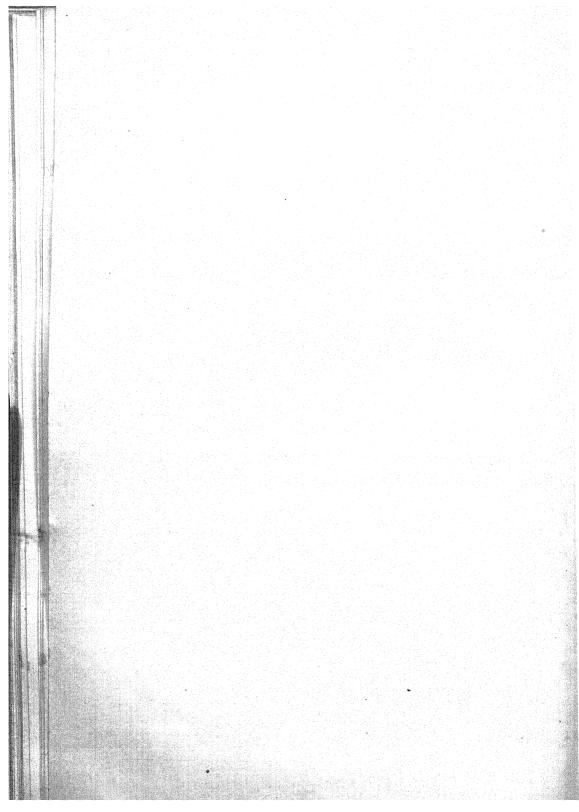
5. The Meaning and Origin of the Phrase "Nuri Muhammad" among the Malays of the Patani States.

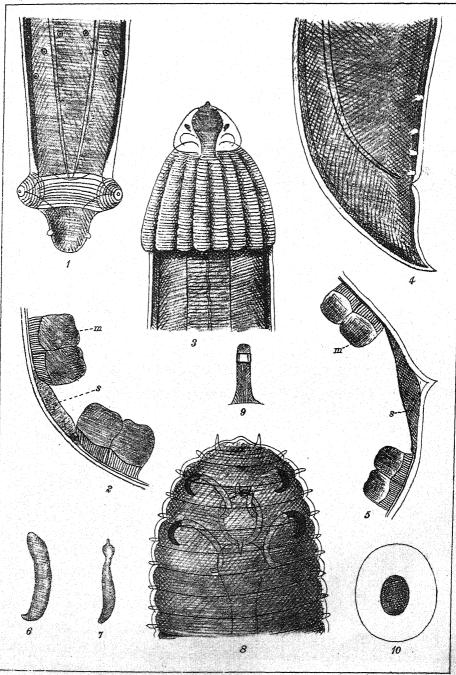
In my account of the religion of the people of the Patani States (Lower Siam) who call themselves indifferently "Malays" (Orang Maláyu) or Muhammadans (Orang Islam), I made no attempt to explain a phrase that I had heard among them, but merely gave its common use and ostensible meaning in Malay, this meaning being the one attached to it by the peasants of the district. The phrase was Nuri Muhammad, which appears to signify "Muhammad's parrot" or "parrots," the word nuri or nori being a usual one and having given rise to the English "lory," though by no means confined to the section of the parrots so called by Europeans. (See Fasciculi Malayenses, Anthropology, II, p. 37.) As there is, properly speaking, no plural in Malay, and as the possessive follows any other case without inflection or particle, Nuri Muhammad appears at first sight to be straightforward Malay; but the conception which the phrase expresses

in Patani is so alien to primitive Malay thought-and the Patani folk are among the most primitive of the Malays-that a foreign origin would not be surprising To the Patani peasant his Nuri Muhammad is very much what his "conscience" is to an uneducated Christian, except perhaps that it is regarded from a slightly more concrete point of view. It is a being which was described to me as sitting in the heart of every Mussalman (one individual, that is to say, in the heart of each believer) and preventing him from becoming wicked, apparently by repeating the precepts of the Prophet as a parrot might do. It was further identified with the "White Jinns" or "Muhammadan Jinns" (Jinn Putch or Jinn Islam), which in British Malaya are generally regarded as independent spirits. But as most of man's dealings with his powerful inferiors the spirits are, according to the Malays, of a somewhat doubtful morality, implying theft, injury to enemies or at any rate to the souls of animals, unlawful excitation to love, and the like; and as the White Jinns are incapable of sin, it follows that these particular spirits are of little account, seldom mentioned and probably seldom remembered except in remorse. The White Jinns are the only moral beings in the lesser mythology of the Patani, Malays. Allah and the Angels (see Skeat, Malay Magic, p. 98) are away in the heavens and trouble themselves little about mundane affairs, while man comes in contact at every turn with the minor ghosts, demons, imps and fairies which people the air, the earth and the waters and animate the whole of nature —dead (according to our ideas) or living.

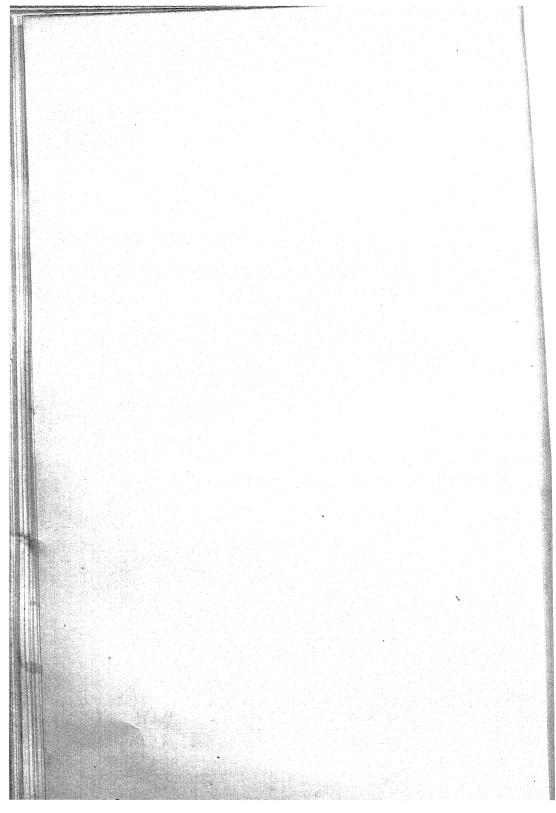
I have long suspected, therefore, that "Muhammad's Parrots" might be of the kin of Allah and the Angels, and I would now suggest that Nuri Muhammad, like so many phrases in Malay, is Persian or Arabic mispronounced and misunderstood; in short, that it is a corruption of the well-known theological expression Nur-i-Muhammad. Hughes in his Dictionary of Islam explains this phrase (literally "the light of Muhammad") as meaning the spirit of Muhammad, which existed before the creation of the world. Elsewhere (Notes on Muhammadanism) the same author compares it with the "divine Word which was made flesh." Col. D. C. Phillott tells me that though this is the correct theological interpretation of the expression, it is frequently misunderstood by ignorant Mussalmans. some of whom explain it as the physical light which radiated from the countenance of the Prophet. Nur, meaning light in either a literal or a metaphorical sense, occurs in Malay writings (see Wilkinson's Malay-English Dictionary, s.v.), but I do not think that it enters the vocabulary of the Patani peasant, whom the Persian

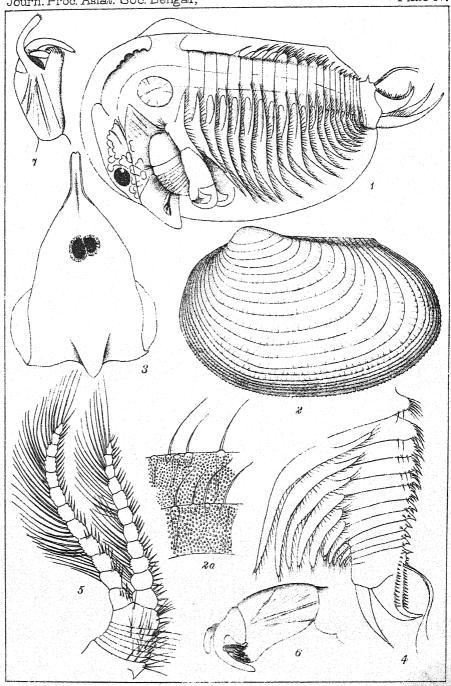
i would certainly puzzle.

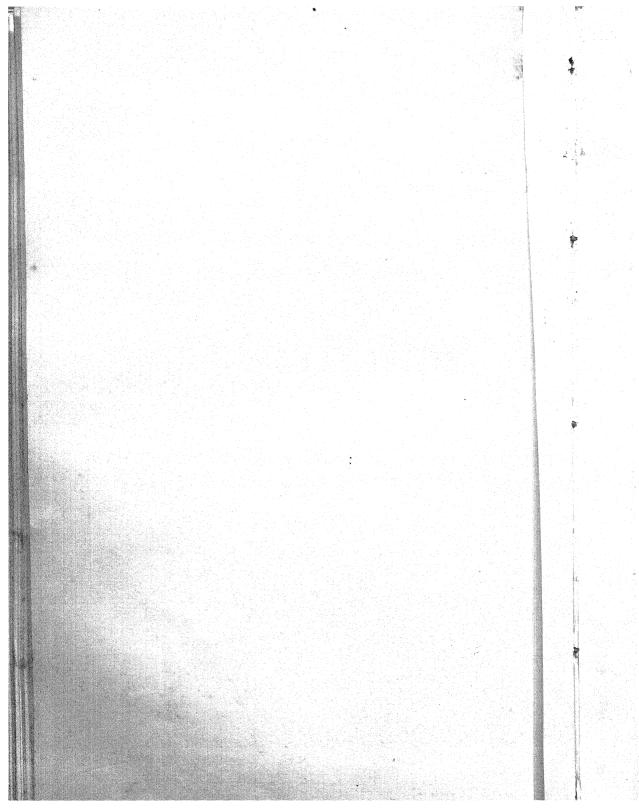


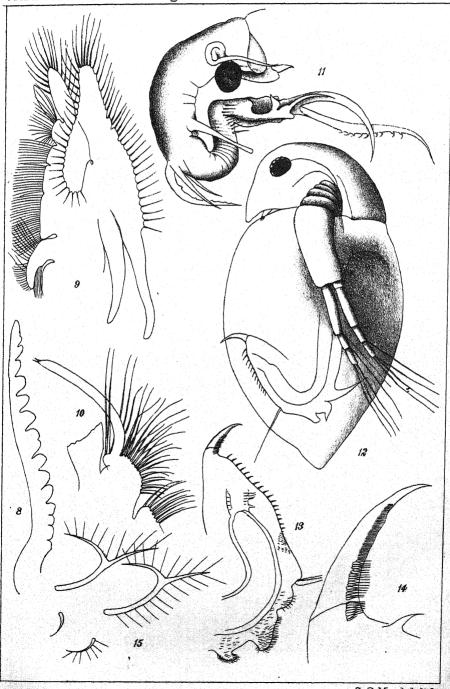


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# AUGUST, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 1st August, 1906, at 9-15 P.M.

THE HON'BLE MR. JUSTICE ASUTOSH MUKHOPADHYAYA, M.A., D.L., Vice-President, in the chair.

The following members were present:-

Dr. A. S. Allan, Dr. N. Annandale, Babu Sasi Bhushan Bose, Mr. I. H. Burkill, Mr. B. L. Chaudhuri, Mr. L. L. Fermor, Capt. A. T. Gage, I.M.S., Babu Amulya Charan Ghosh Vidyabhushana, Mr. H. G. Graves, The Hon'ble Mr. K. G. Gupta, Dr. H. H. Mann, Major F. P. Maynard, I.M.S., Pandit Pandeya Umapati Datta Sharma, Lieut.-Colonel D. C. Phillott, Pandit Yogesa Chandra Sastri-Sankhyaratna-Vedatirtha, Mr. G. H. Tipper, Mahamahopadhyaya Satis Chandra Vidyabhushana, Mr. E. Vredenburg, Rev. E. C. Woodley, Rev. A. W. Young.

Visitors:—Mr. H. Hughes, Mr. C. A. Paiva, Mr. W. D. R. Prentice, Mr. R. E. Whichello.

The minutes of the last meeting were read and confirmed.

Seventy one presentations were announced.

The General Secretary announced that Col. F. B. Longe, R.E., and Mr. S. C. Hill have expressed a wish to withdraw from the Society.

The General Secretary also announced the death of Mr. M. H. Oung, and Mr. W. C. Bonnerjee (ordinary members) and Moulvie Abdul Hai (an Associate Member of the Society).

Lieut. Arthur C. Osburn, R.A.M.C., M.R.C.S., L.R.C.P. (Lond.), proposed by Lieut.-Col. D. C. Phillott, seconded by Mr. H. H. Hayden; Mr. C. Stanley Price, Victoria Boys' School, Kurseong, proposed by Mr. J. A. Chapman, seconded by Mr. W. K. Dods; Captain G. B. Riddick, R.A.M.C., proposed by Major L. Rogers, I.M.S., seconded by Captain J. W. Megaw, I.M.S.; Dr. William Willoughby Kennedy, M.A. (Glasgow), M.D. (Lond.), M.R.C.S., L.R.C.P., D.P.H. (Camb.), proposed by Major L. Rogers, I.M.S., seconded by Dr. H. C. Garth; Dr. A. M. Leake, Chief Medical Officer, Bengal Nagpur Railway, proposed by Lieut.-Col. G. F. A. Harris, I.M.S., seconded by Major L. Rogers, I.M.S., were ballotted for as ordinary members.

Dr. N. Annandale exhibited specimens of a barnacle (Dichelaspis maindroni, Gravel) which is very common on the gills of crabs from the mouth of the Ganges. Specimens were found on a considerable number of edible crabs (Scylla serrata) exposed for sale in Calcutta during July. It is probable that this barnacle is beneficial to its host, as the movements of its cirri must aid in the circulation of the water in the gill-cavity of the crabs and other Crustacea to which it attaches itself. Its presence certainly does not render the flesh of these Crustacea unfit for human consumption, as appears to have been thought by some persons in Calcutta.

The following papers were read :-

1. Bibliomancy, Divination, Superstitions, amongst the Persians.—By LIEUT.-Col. D. C. PHILLOTT.

2. Gentiana Hugelii, Griseb., redescribed.—By Dr. Otto Stapf. Communicated by I. H. Burkill.

3. On Swertia angustifolia, Ham., and its Allie:.—By I. H. Burkill.

4. Notes on Some Rare and Interesting Insects added to the Indian Museum Collection during the year 1905-1906.—By C. A. Paiva. Communicated by Dr. N. Annandale.

5. Hágo and his Grandsons. (A leaf from the history of ancient Kámarupa.)—By Satyaranjan Ray. Communicated by the Philological Secretary.

6. Bulbophyllum Burkilli, a hitherto undescribed species from Burma.—By Captain A. T. Gage, I.M.S.

# LIBRARY.

The following new books have been added to the Library during July 1906:—

Bengal District Gazetteer. Statistical Tables for Angul, Balasore, Bankura, Bhagalpur, Birbhum, Burdwan, Calcutta, Champaran, Chota Nagpur Tributary, Cooch Behar State, Cuttack, Darbhanga, Darjeeling, Gaya, Hazaribagh, Hill Tippera State, Hooghly, Howrah, Jessore, Khulna, Manbhum, Midnapore, Monghyr, Murshidabad, Muzaffarpur, Nadia, Orissa Tributary States, Palamau, Patna, Puri, Purnea, Ranchi, Saran, Shahabad, Sikkim State, Singhb hum, Sonthal Parganas, and 24-Parganas. Calcutta, 1905. 8°.

Presd. by the Govt. of India, Home Dept.

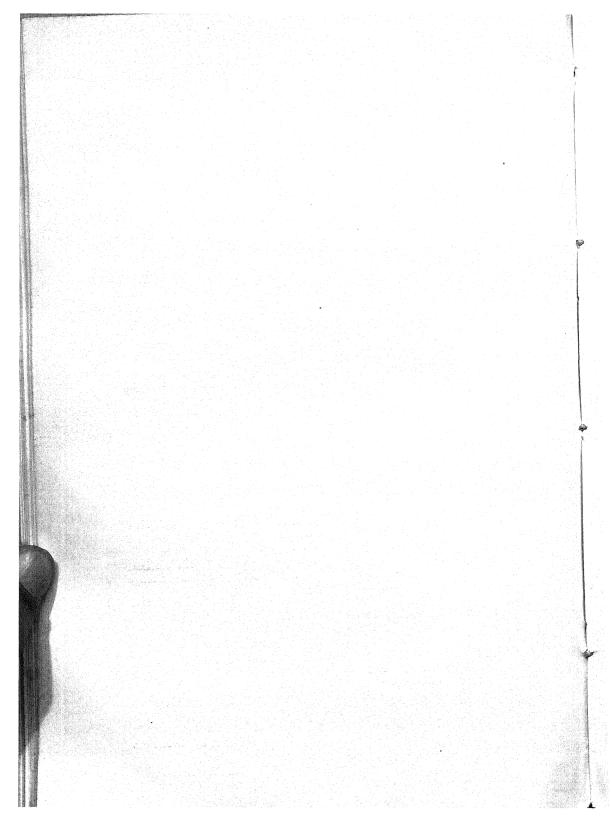
- Bernard, Dr. Ch. Eene ziekte van de Cocospalm veroorzaakt door pestalozzia palmarum. [Batavia, 1906.] 8°.
- Eene ziekte van Hevea, veroorzaakt door de Djamoer oepas. [Batavia, 1906.] 8°.

Presd. by the Botanic Institute of Buitenzorg

- Brailsford, H. N. Macedonia: its races and their future...With photographs and...maps. London, [1906.] 8°.
- Breasted, James Henry. A History of Egypt from the earliest. times to the Persian Conquest... With...illustrations and maps London, 1906. 8°.
- Crawley, Ernest. The Tree of life: a study of religion. London, 1905. 8°.
- THE ENGLISH CATALOGUE OF BOOKS. 1881-1900, 1902, etc. London, 1891, etc. 8°.
- Ganguli, G. D. The Art Industries of the United Provinces. [Allahabad, 1906.] 8°.

Presd. by the Author.

Hutchinson, Jonathan. On Leprosy and fish-eating, etc. London, 1906. 8°.



The Jagadîsî, a commentary on Anumâna, Chintâmanî-Dîdhitî by Siromanî. Edited by Bhatṭanâtha Swâmy.

Benares, 1906. 8°.

Chowkhamba Sanskrit Series, No. 101.

Jong, Dr. A. W. K. de. Extractie van Cocoblad. [Batavia, 1906.] 8°.

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- Lippincott, J. B. A complete pronouncing Gazetteer or Geographical Dictionary of the World... Edited by A. Heilprin and L. Heilprin. London, 1906. 8°.
- Mann, Harold H. The Ferment of the Tea leaf, and its relation to quality in tea. Parts I-III. Calcutta, 1901-1904. 8°.

  Indian Tea Association.
- ——The Fermentation of Tea. Part I. Calcutta, 1906. S. Indian Tea Association.
- The "Mosquito-Blight" of Tea, etc. Parts I-III.

  Calcutta, 1902-1905. 8°.

  Indian Tea Association.
- Tea Soils of Assam, and tea manuring. Calcutta, 1901. So.

Indian Tea Association.

- Mann, Harold H., and Hunter, James. Sisal-Hemp culture in the Indian tea districts. Calcutta, 1904. 8°.

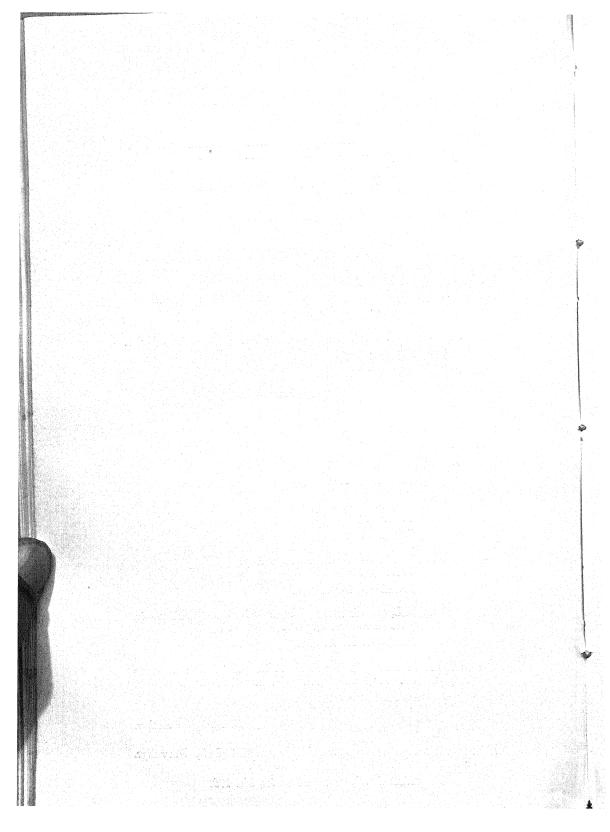
  Indian Tea Association.
- Mann, Harold H., and Hutchinson, C. M. Red Rust: a serious blight of the tea plant. Second edition. Calcutta, 1904. 8°.

  Indian Tea Association.

Presd. by the Author.

Mitra Misra, Pandit. Vîramitrodaya....Edited by Parvatîya Nityânanda S'armâ. Benares, 1906. 8°.

Chowkhamba Sanskrit Series, No. 103.



- Reinach, Solomon. Cultes, Mythes et religions. 2 vols. *Paris*, 1905-1906. 8°.
- ROYAL GEOGRAPHICAL SOCIETY—London. Supplementary Papers, Vol. i. etc. London, 1882, etc. 8°.
- Stow, George W. The Native Races of South Africa....With numerous illustrations....Edited by G. M. Theal. London, 1905. 8°.
- Survey of India. Rainfall from 1868 to 1903, measured at the Trigonometrical Branch Office, Dehra-Dun. [Dehra-Dun, 1906.] Obl.

Presd, by the Surveyor-General of India.

Thurston, Edgar. Ethnographic notes in Southern India. With...plates. Madras, 1906. 8°.

Presd. by Govt. of Madras.

Voeltzkow, Dr. Alfred. Bericht uber eine reise nach Ost-Afrika zur untersuchung der bildung und des aufbaues der riffe und inseln des westlichen indischen ozeans. [Berlin, 1906.] 8°.

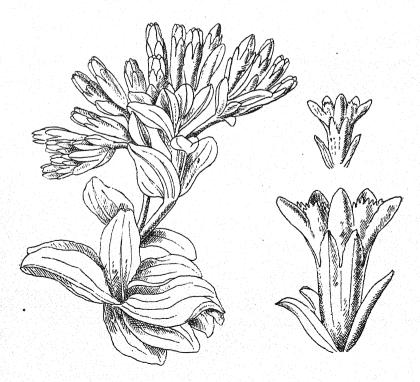
Presd. by the Author.

Zichy, Grufen Eugen. Dritte Asiatische Forschungsreise. Bands I. Herkunft der Magyarischen fischerei von Dr. J. Janko. II. Zoologische Ergebnisse...von Dr. G. Horvath. III-IV. Archæologische Studien auf Russischem Boden von B. Posta. V. Sammlung ostjakischer volksdichtungen...von J. Pápay. VI. Forschungen im osten...von E. Zichy. Budapest, 1900-1905. 4°.

For the second s

# 44. Gentiana Hugelii, Griseb., redescribed.—By Отто Stapf, Ph.D. Communicated by I. H. Burkill.

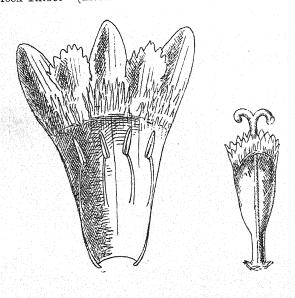
Baron Karl von Hügel travelled in the North-Western Himalaya in 1835, journeying from Simla via Bilaspur, Juala-Mukhi, and Jamu to Srinagar, thence returning to the plains via Mozufferabad and Hussein Abdal: he collected plants among other objects, and the collection which he made lies in the Hof-Museum at Vienna. Grisebach described and dedicated to him a species of Gentian which he had obtained in what he calls "High Tibet," probably meaning thereby the range to the south of the valley of Kashmir which he crossed by the Pir Panjal pass, 11,400 feet above the sea-level. But Grisebach did not describe the plant quite accurately; and subsequent writers have been puzzled by what is stated, especially by the statement that the seeds are winged. The following is a re-description of the plant from the half-dozen preserved specimens, which were kindly lent to me at Kew for the purpose. The drawings have been made by Miss Smith of the Kew staff.



Gentiana Hügelii, Griseb.

Folia infima (paria 2-4) Annua 9-10 cm. alta, glaberrima rosulata, superiora internodiis 1.5-2 cm. longis separata, sessilia, elliptica vel elliptico-oblonga, obtusa, plerumque minute apiculata. majora ad 2.5 cm. longa, ad 1.5 cm. lata, crassiuscula, margine cartilagineo. Flores capitato-fasciculati, rarius in ramis accessoriis vel caulibus depauperatis solitarii; bracteæ exteriores capituli subrotundæ, apiculatæ, foliosæ, cæteræ angustiores tenuiores, calycibus semper breviores Calyx subovoideo oblongus; tubus 1 cm. longus, tenuiter membranaceus; lobi ovati vel elliptico ovati, acuti vel obtusi, ad 4 mm. longi, superne herbacei, cartilagineo-marginati, sinubus interjectis angustis. Corolla circiter 17 mm. longa; tubus oblongus, basin versus attenuatus, 14 mm. longus, intus infra lobos fimbriatus fimbriis 2:5-3 mm. longis; lobi ovati obtusiusculi vel subacuti, 3-5 mm. longi, plicis interjectis in lobos ovatos laciniato dentatos 2.5 mm. longos productis. Antheræ lineares, 2.5 lin, longæ; filamenta 4-5 mm. longa. Ovarium obovoideum, vertice 2-cristatum, crista denticulata; stylus nullus; stigmata linearia, superne dilatata, 2-5 mm longa, revoluta. Capsula obovoidea, clavata, 8 mm. longa, superne 4 mm. lata, 2-cristata cristis membranaceis denticulatis ad 1.5 mm. latis. Semina oblonga, 0.8 mm. longa, exalata, testa lævi.

"Hoch Thibet" (Herb. Mus. Palat. Vindob).



45. Bibliomancy, Divination, Superstitions, amongst the Persians.— By Lieut. Colonel D. C. Phillott, Secretary to the Board of Examiners, Calcutta.

(a) Istikhāra المنتخارة signifies asking divine direction as to any course to be pursued about which the seeker is doubtful, by opening the Qur'an and finding the answer on the right-hand page.

The seeker first repeats the Sūratu-l-Fātiḥah or the "Opening chapter of the Qur'an," the  $S\bar{u}ratu-l-I\underline{k}hl\bar{a}s$  on the declaration of God's unity (chapter 112), and the 58th verse 2 of the Sūratu-l-An'ām or "The Chapter of the Cattle" (6th chapter), three times, and then opens the Qur'an. Sometimes seven Salawat are repeated in addition. Or else the seeker first Si salawāt mī-firistad, i.e., he oh God, bless " اللهم صل على محمد وعلى آل محمد " Oh God, bless Muhammad, and the family of Muhammad. He then says one Alhand (i.e., the Fātiha or opening chapter), and three Qul huwa'llāh, and lastly the Aya-yi Mafātihu-l-Ghaib, which is the 58th verse of the sixth chapter, the "Chapter of the Cattle." Then saying Alláhumma istakhir-nī,3 "Oh God, choose for me," the book is opened at random by the forefinger of the right hand, and the top line of the right-hand page is selected. If no verse begins in this line, the seeker turns back and goes to the beginning of the verse. Verses issuing commands or expressing piety, etc., are propitious.

Another method is, after opening the book as above, to count the number of times the word *Allah* occurs on the page, and then to turn over (forward) the same number of pages and again count the same number of lines from the top; then if no verse commences in that line to read forward and take the first verse that occurs after that line.

The answer is of course often extremely vague. In addition to the above, the Persians, even the most irreligious, generally take an  $istikh\bar{a}ra$  from the  $tasb\bar{\imath}h$  or "rosary." The  $F\bar{a}tiha$  is recited three times and any two beads are taken hold of at random. As the first bead between these two points slips through the finger, the seeker says  $Subh\bar{a}m^a$ "  $ll\bar{a}h$ , "Glory to be God." As the second is slipped,  $Al-hamd^a$   $ll\bar{a}h$ , "Praise be to God"; as the

<sup>1</sup> Istikhāra, lit. "asking favours." The istikhāra that the Prophet taught was a prayer asking for guidance.

The seeker for an istikhāra goes to a mullā, who takes no fee—except perhaps an offering of sweets or fruit.

One form of bibliomancy in England is to take an omen from the first word of the first person heard reading the Scriptures. Taking an omen from a Bible suspended by a key is still common.

<sup>2</sup> Ṣalāt signisis properly any prayer, being the Arabic equivalent of namāz: by the Persians, however, the word has generally a special signification.

<sup>3</sup> Incorrect Arabic for khir-nī, "choose for me."

<sup>4</sup> There are several ways of making this istikhāra. One way is merely a game of "odds and evens."

the third is slipped, y, Wa lā,1="don't do it." These expressions are repeated in this order till the last bead is reached. According as the first, second, or third expression falls on the last bead, the reply is favourable, indifferent, or negative, i.e., khūb, miyāna, yā bad.

From laziness, the Fātiha is in practice usually recited only This form of istikhāra takes little time or trouble—for most Persians carry a rosary in their pockets as a kind of play-thing -and is resorted to on the most trivial as well as on the most

serious occasions.2

(b) Tafāṣul ³ تفا وَل "auguring," is generally applied to seeking a fāl or "omen" from Hāfiz. A volume of the Dīwān of the poet is held in the left hand and some such words as the following are said:—Yā Khwāja Ḥāfiz-i Shīrāzī! tu kāshif-i har rāz-ī; barāy mā, biyā va yak fāl-ī munāsib-i hāl biyandāzī, "Oh Khwāja Ḥāfiz of Shiraz! thou art the revealer of hidden things: come and give us a good omen"; or Yā Khwāja Ḥāfiz-i Shīrāzī turā bi-haqq-i Shākh-i Nabat qasam mī-diham ki kull-i ahvāl rā dar īn kitāb-i khud mu'ayyan kun, "Oh Khwāja Ḥāfiz of Shīrāz! I adjure thee by Shākh-i Nabāt to point out in this book of thine all I have to do." The book is then opened. The eyes are closed when doing so, and the volume is opened at hazard 6; the first line of the righthand page is taken, and the seeker then turns back to the beginning of that ghazal. If the omen is favourable, the ghazal following it is also read: this is called the Shāhid-i ghazal-i avval "The confirmer of the first ode," and if propitious, is acted on in preference to the first.

The Persians also consult astronomers and geomancers 7 before starting on a journey, closing a bargain, or even changing a sleeping-room in a house; they believe, too, in lucky faces, fortunate

numbers, and unlucky days.

Geomancy is supposed to have been discovered by Daniel. Geomancers, therefore, before casting say, "Yā Hazrat-i Dānyāl."

(c) The 13th of Safar, the second month in the Muslim calendar, and the 13th of the Nauruz, are specially ill-omened

1 Wa lā, the first words of the formula, Wa lā Ilāha illa'llāh.

3 Fal giriftan, "to seek an omen"; tafā'ūl zadan, "interpreting or acting

on the omen."

4 There is no fixed formula.

5 Shākh-i Nabāt, lit. "slip of sugar-candy"; the name of the beloved of Hafiz: the word Shākh gives the idea of something tall and willowy.

6 By running the nail of the forefinger of the right hand through the top edges of the leaves, the book being held in the left hand by the back, front edges towards the sky.

<sup>2 &</sup>quot;Shall I or shall I not take a purge?" out come the beads. Many a European doctor, anxious to perform a critical operation, has fretted and fumed because day after day the beads declared the day to be unfavourable.

<sup>7</sup> Munajjim, "astrologer," and 'ilm-i nujūm, "astrology"; falakī, "astronomer"; and 'ilm-i hai'at, "astronomy." Rammāl, "geomancer"; 'ilm-i raml, "geomancy"; and raml andākhtan, "to divine by geomancy"; zīch-i tāli kashīdan, "to cast a horoscope." Fālgīr is applied to any professional omen-taker.

days!; the 5th and 13th of every month less so. To avoid the evil that might overtake them were they to remain indoors, all Persians, on the 13th of the Naurūz, leave their homes and spend the day in the open air from sun-up to sun-down. Disaster follows a quarrel during these hours. On the last Wednesday of Safar. boys and girls jump over a fire.2

Omens are also taken from birds, animals, the number of times a person sneezes, the crossing of a threshold with the right

or left foot first, and many other ways.

Persians have a firm belief in the evil eye, chashm-i bad or chashm-zakhm. Anyone may be possessed of the evil eye without knowing it.4 Some superstitious people even say, "Mā shās Allāh" when admiring their own countenances in a mirror, thus warding off the evil effects of their own admiring eyes.

Blue wards off the evil eye, and for this reason valued animals are adorned with beads of this colour. Also the ispand, wild rue

seed, burnt in the fire has a like virtue.

Pretty children are often purposely kept dirty and unkempt and are further guarded from malign influences by amulets, ta'viz.5

Carpets are generally woven by the tribes' people with some small defect in the pattern, to avert the evil eye.

Strange to say, a pig 6 in the stable will ward off the evil eye

from the horses and mules.

Certain cities, the houses of Mullas, British Consulates, a stable, etc., all constitute sanctuary or bast. The writer once saw a soldier clinging to a big gun in the square of Kerman, declaring it was bast. However, in spite of his protestations he was forcibly removed by the Governor's farrāshes.

The time of Nau Rūz is a general holiday. People make picnics for 13 days, and every master is supposed to present his

1 Manhūs or bad.

2 The Prophet died in the month of Safar. It is supposed that the Last Day will fall on the last Wednesday of this month.

3 The Shah has the right to see every woman in the kingdom unveiled, and the royal glance is fortunate. The mujtahids have the same right, being considered mahram.

4 In mard bad-chashm ast, or chashm-i shar (or sham) darad (m.c.): "this man has the evil eye"; īn shakhs zabān-ash shām ast (m. c.): "this man

always prophesies unlucky things."

b Bāzū-band, a charm made by writing a text, wrapping it in bulghār or scented leather, which is then bound on the child's arm. An amulet is also called filism or "talisman."

Dam-rāhī, more commonly sar-rāhī, is money expended in charity on the

threshold by a departing traveller to insure a safe return.

In India some Muslim women bind a coin on the arm of a departing relative, to be expended in charity on his safely reaching the journey's end.

6 Tweedie mentions a wild boar being kept in the stables at Baghdad. Some say the breath of a pig is good for horses. In 'Arabistan, pig's flesh is said to be eaten under the name of gusfand-i Farangi. Ham in Persia is sometimes called gusht-i bulbul, a name said to have been invented by a telegraph clerk

The Baluchis of Bampur in Persian Baluchistan, a very different-looking race to the fine people near to the Dera Chāzī Khān Frontier in India, eat

wild pig and also foxes.

servants with one month's pay. The chief of a Dervish sect will auction certain sights, such as the Governor's Palace, the British Consulate, etc., to his followers. The purchaser erects a tent and blows a horn and refuses to move on unless given a satisfactory sum over the sum he paid for the site.

Persians attribute misfortunes to the revolution of the heavens,

to the "evil eye" of time, to the world, etc.1

The influence of the heavens on the fortunes of man appears to be an ancient superstition dating back to a pre-Islamic period. It has been supposed that Persians attribute their ills to the heavens to avoid the appearance even of attributing misfortune to the Deity. This is not, I think, the case, for the Persians still believe that the revolution of the skies actually affects man's fate. Muslims who wish to avoid the appearance of ascribing ill to the Deity, attribute the occurrence to Fate, Qazās, Qadar or Taqdār. In the religious drama of Husain, the sky is accused of being the author of his misfortunes.

The following poetical quotations exemplify this belief:-

Āy charkh-i falak kharābī az kīna-yi tust. O. K.

"Ah! wheel of heaven to tyranny inclined."
(Whin. Trans. Rub. 25.)

În char<u>kh</u>-i jafā-pīsha-yi ' ālī bunyād Hargiz girih-i kā**r**-i kas-ī rā na-gushād Harjā ki dil-ī dīd ki dā<u>yk</u>-ī dārad Dā<u>gk</u>-ī dīgur-ī bar sar-i ān dā<u>gk</u> nihād.

0. K.

"The wheel on high, still busied with despite,
Will ne'er unloose a wretch from his sad plight;
But when it lights upon a smitten heart,
Straightway essays another blow to smite."

(Whin. Trans. Rub. 154.)

Āy char<u>kh</u> chi karda am turā, rāst bi-gūy, Paivasta figanda-ī marā dar tak u pūy? O. K.

"Oh wheel of heaven, what have I done to you
That you should thus annoy me? Tell me true."
(Whin. Trans. Rub. 499.)

Chūn lāla bi-Nau-Rūz qadaḥ gīr bi-dast Bā lāla-rukh-ī agar turā furṣat hast Mai nūsh bi-khurramī ki īn charkh-i kabūd Nāgāh turā chu bād gardānad past. O. K.

"Like tulips in the spring your caps lift up,
And with a tulip-cheeked companion, sup
With joy your wine, or e'er this azure wheel
With some unlooked-for blast upset your cup."

(Whin. Trans. Rub. 44.)

<sup>1</sup> Falak, Dunyā, Zamāna, Dahr, Gardūn, Charkh, Chashm-zakhm-i māna, etc.

46. Bulbophyllum Burkilli, a hitherto undescribed pecies from Burma.—By A. T. GAGE.

Amongst the plants collected by Mr. I. H. Burkill, Reporter on Economic Products to the Government of India, during his tour in Burma in the early part of 1904, and presented by him to the Royal Botanic Garden, Calcutta, was a small orchid found growing in an open forest of teak, bamboo and Strychnos, near the town of Mya-wadi in the Amherst district, between the Dawna hills and the Siamese frontier. Quite recently this orchid has flowered in the Calcutta Botanic Garden, and, as it has been found to be a hitherto unknown species, the following description of it is offered:—

BULBOPHYLLUM BURKILLI, Gage, sp. nov.—Typus et icon in herbario horti botanici regalis calcuttensis. Rhizoma tenue, circa 1.5 mm. crassum; radices filiformes, circa 1-3 mm. longæ, pallide virides, glabræ, cæspitosæ. Pseudo-bulbi approximati, ovoidei, circa 1 cm. longi, 9 mm. crassi, pallide virides, glabri, unifoliati. Folia subsessilia, elliptica vel elliptico-oblonga, apice acuta, basi obtusa, 3-4·3 cm. longa, circa 1 cm. lata, crassiuscula, glabra, integra. Pedicelli solitarii, uniflori, e basi ascendentes, 2-3 cm. longi, pallide-virides, rubro-punctati. Bracteolæ 2-3, minutæ, basilares. Sepala subæqualia, integra, triangularia, acuta, viridia, obscure 5-nervia, 1 cm. longa, 6 mm. lata, lateralia in columnæ pede adnata. Petala minuta, 2-2 5 mm. longa, 0 5 mm. alba, acuta. integra. purpureo 3-nervia. lata, oblonga, Labellum sessile, trigonum, integrum, recurvatum, viride, 2.5 mm. longum, 1.8 mm. latum, basi incurviter bi-denticulatum, supra in medio depressum, infra canaliculum medium marginibus postice incurvatis exhibens. Columna brevis, apice et antice bi-denticulata. Anthera oblonga; pollinia 4, duo interiora minora. Capsula non visa.

BURMA INFERIOR.—In silvis prope oppidum Mya-wadi in pago Amherst et haud procul a finibus siamensibus, Burkill!

Adopting the divisions of the Eu-bulbophyllum section of the genus as given in the Flora of British India, this species would come into subsection A. "Flowers solitary" (F. B. I. v., 753), and the second division of that section. "Column with two long teeth or spines at the top" (F. B. I. v., 756). Under this, five species are described, viz:—B. leopardinum, Lindl., B. Griffithii, Reichb. f., B. Dayanum, Reichb. f., B. membranifolium, Hook. f., B. moniliforme, Parish & Reichb. f.

Of these, the first two and the last two have the lip stipitate. B. leopardinum and B. membranifolium are remarkably like each other; and it is difficult to get hold of distinguishing characters.

The following artificial key is an attempt to facilitate the recognition of the species:—

Lip stipitate-

Leaves large, 7-20 cm. long
Columnar spurs stout ... B. leopardinum.
Columnar spurs long,
falcate ... B. membranifolium.
Leaves small, less than 7 cm. long
Pseudo-bulbs ovoid; flow-

ers 2.5 cm. in diam. ... B. Griffithii.
Pseudo-bulbs pisiform;

flowers 8 mm. in diam. B. moniliforme.

Lip sessile, trigonous-

Flowers ciliate; petals red ... ... B. Dayanum. Flowers eciliate; petals white ... B. Burkilli.

Of the Burmese species, B. Burkilli is nearest to B. Dayanum agreeing with it in the size of leaf, the absence of a scape, the sessile trigonous lip with incurved uncinate basal auricles and short columnar teeth. B. Burkilli is, however, a smaller plant than B. Dayanum, and has smaller flowers than the latter. Of the Siamese species so far described B. monanthos, Ridley, (Journ. Linn. Soc. Bot. xxxii., p. 271) appears to be nearest to the species now described, from which it differs amongst other things in having a lanceolate flat lip, yellow with a purple spotted base. Although for Indian botanists who may confine themselves to the Flora of British India the position assigned to B. Burkilli above has the advantage of convenience, it probably with more correctness should be placed in Ridley's Monanthaparva section, which includes one-flowered Bulbophylla of small size.

47. Notes on Some Rare and Interesting Insects added to the Indian Museum Collection during the Year 1905-06.—By C. A. Paiva, Entomological Assistant, Indian Museum. With a prefatory note by N. Annandale.

So little is known regarding the distribution of the Insects of India that exact records of carefully identified and labelled specimens are still important. No apology, therefore, need be made for communicating the present paper to the Asiatic Society of Bengal. It is within my knowledge that all the identifications have been made with the greatest care and that the localities and dates attached to the specimens are authentic. I should like, however, to call the attention of the members of the Society to one aspect which the publication of such a paper bears. records given are only those which add something new to what has been already published. With a few exceptions they depend on collections made hastily and at odd moments during the course of a month by two collectors who have a great deal of other work to do; and these collections were not made in inaccessible parts of India, but in Calcutta and the Darjiling and Purneah districts. This paper may therefore be said to illustrate our ignorance of Indian Entomology. It contains no identifications of species hitherto unnamed, not because specimens of new species did not occur in the collections on which it is based, but because such specimens have been referred for determination and description, whenever possible, to specialists in Europe and America. I would enter a plea for the study of the distribution of the common Insects of India. The publication of those volumes of the "Fauna of India" series which have already appeared, has made this study possible, as regards several interesting groups, for the naturalist who has no very great expert knowledge but is prepared to devote time and patience to the labelling and identification of his specimens.

N. Annandale.

The following notes contain records of some rare and interesting specimens lately added to the collection of the Indian Museum. The majority of them belong either to the Hymenoptera, or the Hemiptera. As regards the former group I have followed the nomenclature of Col. Bingham, and as regards the latter that of Mr. W. L. Distant, in the volumes of the "Fauna of British India."

I am indebted to Dr. N. Annandale, Officiating Superintendent of the Indian Museum, who has read through the manuscript, for his numerous suggestions and corrections.

### APTERA.

### LEPISMIDÆ.

# ACROTELSA COLLARIS (Fabr.).

Lepisma collaris, Fabricius, Entom. Syst. ii. (1793), p. 64: Lepisma collaris, Burmeister, Handb. d. Entom. v. 2 (1838), p. 457: Lepisma niveofasciata, Templeton in Trans. Entom. Soc. v. 3 (1843), p. 302: Lepisma collaris, Gervai:, Walk. Ms. Apt. v. 3 (1844), p. 453: Lepisma cincta, Oudemans, Weber, Zoolog. Ergebnisse v. 1 (1890), p. 80, t. 6, fig 1: Acrotelsa collaris (Fabr.), K. Escherich, Bibliotheca Zoologica, xviii. (1905), p. 107, figs. 43a-b, and pl. I.

This large Fish Insect was obtained by Dr. N. Annandale in Calcutta. It may be quite common in houses among old books, etc., but very few specimens have been collected in Southern Asia In fact this is the first one recorded from India. It has a very wide distribution, having been recorded from the West Indies, La Guayra, Curacao, Maracaibo, Dahoma, the Seychelles, Java, Ceylon

and Madagascar.

### ORTHOPTERA.

### BLATTIDÆ.

# PERIPLANETA BIOCULATA, De Sauss. MS.

There is a specimen in the Indian Museum Collection, labelled by de Saussure as "P. bioculata, female larva," together with two others which were collected by Dr. N. Annandale at Chakradharpur, Chota Nagpur, under stones in March, and

several from Java (Forbes).

Some of these specimens are in all probability adult wingless females, as there can be seen in nearly every one at the sides of the mesonotum and metanotum, small pieces separated by distinct sutures, which are traces of rudimentary alar organs. The specimen sent to M. de Saussure was in a very bad condition and two of the spots were covered by the metanotum.

As the species does not seem to be described in print,

I append a diagnosis of it.

# Diagnosis-

Black, shining, wingless, elliptical, smooth, with six yellowish brown spots above. Head extending very slightly beyond the anterior margin of the pronotum; black, narrowest between the antennæ, and with two minute creamy spots near the inner margins of the antennal cavities.

Antennæ black, becoming brownish towards apex, filiform

and moderately pilose throughout their length; about half the length of the body. Eyes small, black, with very minute grey spots, scarcely visible, being covered by the pronotum. Pronotum black, hood-shaped; anterior margin slightly arched, lateral margins rounded, with a slight fold anteriorly, near the region of the eyes; posterior margin nearly straight. Abdomen beneath black. Coxe smooth, flat, black, with a few minute spines above and several larger ones below. Tibæ very spinose, tarsi more or less setose, the last joint lighter in colour than the preceding joints, ending in a pair of simple claws.

The six spots are arranged as follows, a pair on the disc of the mesonotum, a pair at the base of the abdomen, and a pair near the

apex of the abdomen.

The apex of the abdomen is furnished with a pair of "torpedo" shaped cerci, which are black, smooth on the inner surface, densely pilose outwardly.

Total length, 17-20 mm. Maximum breadth of the pro-

notum, 8.5 mm.

### Localities—

Chota Nagpur, Chakradharpur: (Annandale), Vizagapatam,

and Java (Forbe:).

A specimen from Vizagapatam, which has been named by de Saussure, is in every respect similar to those from Chakradharpur, except that the colour of the eyes is a little different and that they appear more conspicuous in the South Indian specimen. These differences cannot be of much importance, as in the Javan specimens the colour of the eyes is not constant, being nearly white in one specimen. The change may be due to preservation.

### HYMENOPTERA.

### POMPILID $\pmb{\mathcal{X}}$ .

POMPILUS HECATE, Cam.

Bingham in Blanford's Fauna of British India, Hymenoptera, i., p. 171.

A specimen of this rare species was obtained by the Museum collector in Calcutta. It agrees with Col. Bingham's description

in every respect and I have no doubt about its identity.

The only other specimen hitherto recorded, is the one in Rothney's Indian collection. This specimen is not perfect, having, as Col. Bingham states, "no head, and being otherwise damaged." There are two others in the Dudgeon collection now in the Indian Museum. They are from the Kangra Valley.

### SPHEGIDÆ.

### SPHEX NIVOSUS (Smith).

Bingham in Blanford's Fauna of British India, Hymenoptera, i., p. 244.

On examining the Hymenoptera which was received by the Indian Museum from the Seistan-Afghanistan Commission, I found a Sphegiid which looked interesting, being quite different to those which one is accustomed to see in the plains. On further examination and comparison, I identified it as Sphen nivosus. It is the only specimen now in the Indian Museum collection, and from Col. Bingham's note on it, there does not seem to be more than one specimen in the collection of the British Museum. The locality recorded by him is "Northern India," which is rather vague. Smith and Cameron give the same vague locality as Bingham. Rothney, during the many years he spent in the North-West Provinces (now the United Provinces), does not seem to have obtained even a single specimen.

### AMPULEX NOVARÆ, Sauss.

Bingham in Blanford's Fauna of British India, Hymenoptera, i., p. 256.

Along with *Pompilus hecate*, Cam., the Museum collector obtained a single specimen of this species in Calcutta. There are two (a & and a ?) in the Dudgeon collection now in the Indian Museum. These are from the Kangra Valley, 4500 feet, and were taken in December, 1899.

Colonel Bingham states that he had no specimens before him when compiling his monograph on the Indian Hymenoptera for

Blanford's "Fauna."

The only localities hitherto recorded are Darjiling and Hongkong. Among the unidentified specimens of Ampulea in the Indian Museum Collection, there is a series of specimens from Bangalore, which I have also identified as A. novuræ.

Judging from the localities mentioned, this species appears to

have a very wide range.

# OXYBELUS CANESCENS, Cam.

Bingham in Blanford's Fauna of British India, Hymenoptera, i., p. 320.

A single specimen of this little Sphegiid was obtained by Messrs. Richardson and O'Sullivan of the Indian Museum, during a recent visit to Siliguri, N. Bengal, Vol. II, No. 8.] Notes on some Rare and Interesting Insects.
[N.S.]

It is doubtless a rare species, and very little is at present known about its distribution, Barrackpore, near Calcutta, having been the only locality recorded hitherto.

### EUMENIDÆ.

EUMENES CONICA (Fabr.), var.

Bingham in Blanford's Fauna of British India, Hymenoptera, i., p. 343.

Two peculiar specimens (a  $\sigma$  and a Q) of a Eumenid were recently obtained by the Museum collector in Calcutta. They agree with Col. Bingham's description of this species as regards both size and form, but their coloration differs remarkably from that of the description, as well as from that of the specimens in the Indian Museum collection.

In the female the head instead of being yellow is red. It is very nearly the same colour as the antennæ. The posterior portion of the mesonotum is very much darker than the anterior,

being very nearly brownish-black.

The base of the petiole is black and it has also a subapical well-defined black transverse band above. The transverse medial band on the second abdominal segment above is entire, not medially interrupted.

The bases of segments 3-6 above are also black, but cannot be seen distinctly, owing to the overlapping of the anterior segments. The apical margins of segments 3-5 are very narrowly

yellowish.

In the male the head is the same colour as the female, viz., red. The posterior portion of the mesonotum is very much darker than the anterior, being nearly black. The second abdominal segment appears to have two transverse black bands above, but on closer examination the second band near the apical margin is seen to be in reality the black transverse band on the basal margin of the third segment seen through the semi-transparent dorsal plate of the second abdominal segment. The third to the fifth abdominal segments have at their bases above, transverse blackish-brown bands. The sixth abdominal segment has at its base, above, a medially interrupted yellowish transverse band followed by a dark brown transverse fascia, and its apex very narrowly reddish-yellow. The seventh abdominal segment above has at its base a transverse dirty yellow band, with the apical half brown enclosing a slightly reddish-yellow spot. The abdomen beneath is much lighter in colour.

### VESPIDÆ.

### POLISTES ADUSTUS, Bingh.

Bingham, in Blanford's Fauna of British India, Hymenoptera, i., p. 397.

Several specimens were obtained by Dr. N. Annandale at Kurseong, 5000 feet, E. Himalayas, where it is rather common, in May, along with a nest, which was found attached to a boulder on the side of a hill.

There is a slight difference between these specimens and those described by Colonel Bingham. The post-scutellum, instead of having a square dark-red spot at each lateral angle is entirely red; this difference being perhaps varietal.

The nest-resembles that of Polistes hebræus to a very

marked degree.

The following is a list of Hymenoptera obtained on or near the Perso-Baluch Frontier, by the collector attached to the Seistan Boundary Commission (1903-05) under Sir A. H. McMahon. There are several other species which I have been unable to identify, some of which may be new.

# Sphegidæ:-

Notogonia subtessellata (Smith), Sceliphron bilineatum (Smith), Sphex nivosus (Smith), Stizus rufescens (Smith), Bembex trepanda, Dalhb.

#### Eumenidæ:-

Eumenes dimidiatipennis, Sauss.

# Vespidæ:-

Polistes hebræus (Fabr.), Vespa magnifica, Smith, ,, orientalis, Linn.

# Apidæ:--

Crocisa ramosa, Lepel, Anthophora quadrifasciata (Villers).

### Formicidæ :-

Myrmecocystus setipes, Forel.

#### HEMIPTERA.

#### PENTATOMIDÆ.

STORTHECORIS NIGRICEPS, Horv.

Distant in Blanford's Fauna of British India, Rhynchota, i., p. 78.

In the old Indian Museum collection there was only one very badly damaged specimen, which was from the Dhunsiri Valley and was obtained by Col. Godwin-Austen. It is labelled "Scotinophara tarsalis?" Its condition is too bad to allow of comparison with the specimen which is here noted and which was collected by me at Purneah, N. Bengal, in May last. A second specimen has been obtained by Dr. N. Annandale at light on the 16th July in Calcutta. The other Indian localities from which this species has been recorded are the Khasi Hills (Chennell); and Sibsagar (Coll. Dist). It has also been reported from Java and Borneo, and may possibly be found to extend through Burma to the Malay Peninsula.

In life it is so much like dry grass that it cannot be easily seen, and even when on the ground it escapes notice. Diligent

search may prove a wider distribution of the species.

Sciocoris indicus, Dall., and Sciocoris Lewisi, Dist.

Distant in Blanford's Fauna of British India, Rhynchota, i., p. 126.

There were no specimens of the above two species in the Indian Museum collection, but I obtained several of the genus in the Purneah District in May last, and on comparison with the descriptions given by Distant, I have identified two as S. indicus and eight as S. lewisi.

S. indicus has rather a wide range in India, having been recorded from North India (British Mus.), Malabar (Coll. Dist),

and Coonoor (Brit. Mus.).

S. lewisi seems to be less widely distributed. The only localities mentioned by Distant being the Khasi Hills (Chennell), and Ceylon (Lewis).

# ÆSCHROCORIS CEYLONICUS, Dist.

Distant in Blanford's Fauna of British India, Rhynchota, i., p. 163.

Among the many Insects I collected in the Purneah District in May last, I was fortunate enough to get one specimen of this

species. It is the first that has been recorded from India proper. and is the only one now in the Indian Museum collection. The type specimen is in the British Museum and was collected by Mr. E. E. Green in Ceylon. There is no other locality on record. It is quite possible that the species may be found in any part of India.

# MEGYMENUM SEVERINI, Berg.

Distant in Blanford's Fauna of British India, Rhynchota, i., p. 287.

A specimen was obtained at Kurseong by Dr. N. Annandale in May last. There were none in the Indian Museum Collection, although there were several of M. inerme, M. brevicorne, M. parallelum, and M. subpurpurescens. These five species are the only ones as yet recorded from India.

# UROLABIDA UNILOBA, Stål.

Distant in Blanford's Fauna of British India, Rhynchota, i., p. 306.

New to the Indian Museum collection and obtained by Dr. N. Annaudale at Kurseong in May.

## COREIDÆ.

# STENOCEPHALUS LATERALIS, Sign.

E Distant in Blanford's Fauna of British India, Rhynchota, i., p. 406.

Obtained by me in the Purneah District in May. It does not seem to be very common there. I obtained only one specimen. It has hitherto been recorded from Bombay and Madras (Coll. Dist.), and Ceylon (Green). This species must also be rather widely distributed.

# PHYSOMERUS GROSSIPES (Fabr.).

Distant in Blanford's Fauna of British India, Rhynchota, i., p. 383.

One specimen was obtained by Dr. N. Annandale in May, at Kurseong, E. Himalayas, and ten others by the Museum collector in Calcutta in June.

Dr. Annandale's specimen agrees exactly with Distant's figure of the species; but those from Calcutta differ from Distant's figure in that the two distinct longitudinal oblique pale ochraceous lines on either side of the central longitudinal line on the

pronotum, are very indistinct, so much so that in one or two specimens they are entirely obsolete.

Distant, however, omits to mention the presence of these two outer lines in his description of the species, although they are quite distinct in his figure.

In the description Distant says that the posterior *tibiæ* are strongly incrassated. This appears to be a misprint. He must mean the posterior *femora*.

### ACANTHOCORIS SCABRATOR (Fabr.).

Distant in Blanford's Fauna of British India, Rhynchota, i., p. 385.

Doubtless a very common and widely distributed species. There are several specimens in the Indian Museum collection from Sikkim, Margherita, Bangalore (Cameron), Sadeya, Mergui, Tenasserim, the Andaman Islands, and Japan (Pryer). The species has also been recorded by Distant from the Khasi Hills (Chennell); Bombay (Leith); Ceylon (Parry; Brit. Mus.); Burma; Karenni (Fea). Also from many of the islands of the Malayan Archipelago. I obtained a specimen in Calcutta on June 28th in one of the verandahs of the Museum.

### LYGÆIDÆ.

# PROSTEMMIDEA MIMICA, Reut.

Distant in Blanford's Fauna of British India, Rhynchota, ii., p. 18.

A few specimens of this little bug were obtained by me in the Purneah District. In life it is very much like a little Parasitic Hymenopteron, which I have also taken in Purneah. All the specimens obtained were caught during the day, on the railings of a house in Katihar, Purneah District. These are the only specimens in the Indian Museum collection. The type was obtained at Bombay (Wroughton).

# PERITRECHUS ÆRUGINOSUS, Reut.

Distant in Blanford's Fauna of British India, Rhynchota, ii., p. 76.

Obtained in the Purneah District in May. This is the first specimen from India proper. The only other one on record was obtained by Fea at Palon, Mandalay, Burma. Another specimen was found sheltering itself in a cocoon of *Actias selene*, which was sent to the Indian Museum by Major A. Manners-Smith, from Katmandu, Nepal, in July.

# PYRRHOCORIDÆ.

# PYRRHOPEPLUS PICTUS, Dist.

Distant in Blanford's Fauna of British India, Rhynchota, ii., p. 116.

Not previously represented in the Indian Museum collection. One specimen obtained at Kurseong in May by Dr. N. Annandale. Recorded hitherto from Sikkim (*Goll. Dist.*); Sylhet (*Brit Mus.*); Shillong, Naga Hills (*Doherty*); Burma, Karenni (*Fea*).

# REDUVIIDÆ.

# TRIBELOCEPHALA INDICA, Walk.

Distant in Blanford's Fauna of British India, Rhynchota, ii., p. 220.

The only species of the small genus *Tribelocephala* which is known to occur in India. I obtained one specimen in the Purneah District in May. It is new to the Indian Museum collection and gives the only definite locality in India proper, the specimen in the British Museum having "North Bengal" as its locality. It has also been recorded from Peradeniya, Ceylon (*Green*).

# Pygolampis fæda, Stål.

Distant in Blanford's Fauna of British India, Rhynchota, ii., p. 223.

One specimen from Purneah (Paiva) not recorded from India proper before. The localities mentioned by Distant are Peradeniya, Ceylon (Green); Karenni, Bhamo, Burma (Fea); Malewoon, Tenasserim (Fea).

# PYGOLAMPIS UNICOLOR, Walk.

Distant in Blanford's Fauna of British India, Rhynchota, ii., p. 223.

Four specimens of this bug have been added to the Museum collection, 2 from Kurseong (Annandale); and 2 from Purneah (Paiva). All these were taken in May. There were no specimens in the Museum collection before, and the only locality recorded by Distant is "North Bengal."

### REDUVIUS TRANSNOMINALIS, Dist.

Distant in Blanford's Fauna of British India, Rhynchota, ii., p. 251.

One specimen from Purneah (Paiva). The only one now in the Indian Museum collection. The British Museum does not seem to possess any, as the only one mentioned by Distant is in the collection of the Vienna Museum. Its locality is given as "North India."

### ACANTHASPIS RAMA, Dist.

Distant in Blanford's Fauna of British India, Rhynchota, ii., p. 268.

This species was described by Distant in 1904. There were no specimens of it in the Indian Museum collection. In the Atkinson Collection of the British Museum there are specimens from

Sikkim and Berhampur.

I was able to obtain only one specimen in the Purneah District, although I saw several which sheltered themselves in crevices of old trees. These crevices were more or less closed up with mud which formed the nests of Ampulex compressa. Possibly the bug feeds on the young of this Sphegiid or on the food which is stored up by the adults for the young. I generally came across the bugs in couples. They are very active and difficult to catch.

# ECTOMOCORIS ELEGANS (Fabr.).

Distant in Blanford's Fauna of British India, Rhynchota, ii., p. 295.

A specimen of this species was obtained by Dr. N. Annandale in Calcutta at light on the evening of July 15th. It is the first that has been recorded from India proper. Distant mentions the following localities:--Burma: Rangoon, Minhla (Fea). Tenasserim: Kawkareit (Fea). Siam (British Museum); several islands of the Malayan Archipelago; Timor (Doherty).

Dr. Annandale's specimen differs slightly from Distant's description; the two linear fascia near the lateral margins of the

corium being nearly obsolete.

A feature which Distant has omitted in his description is the distinct patches of silvery pubescence on the meso and metasterna, near the region of the intermediate and posterior coxal cavities.

### ECTOMOCORIS CORDIGER, Stål.

Distant, in Blanford's Fauna of British India, Rhynchota, ii., p. 295.

Of this apparently widely distributed species there was only one specimen in the Museum, until I obtained another at light in Calcutta, on the 18th July. The first was obtained by me in the Purneah District. The species has been recorded from North Bengal (Brit. Mus.); Sylhet (Stockholm Mus.); Bombay, Borghat (Dixon); Ceylon (Green); and the Persian Gulf (Brit. Mus.).

### PIRATES FLAVIPES (Walk.).

Distant in Blanford's Fauna of British India, Rhynchota, ii., p. 297.

This species is also new to the Indian Museum collection. It was obtained in the Purneah District in May last. Little is known regarding its distribution. Mr. Distant mentions the following localities:—"North India" (Brit. Mus.); Kangra Valley (Dudgeon); Bengal, Berhampur (Atkinson).

# Pirates affinis (Serv.).

Distant in Blanford's Fauna of British India, Rhynchota, ii., p. 299.

This species has hitherto been recorded from Assam; the Khasi Hills (Chennell); Bombay (Leith); Burma: Rangoon, Teinzo, Bhamo (Fea); also from the Malay Peninsula, Cochin China, Java and some other islands of the Malayan Archipelago. The only specimen which is now in the Indian Museum collection was obtained by me in the Purneah District in May.

SPHEDANOLESTES PUBINOTUM, and S. INDICUS, Reut.

Distant in Blanford's Fauna of British India, Rhynchota, ii., pp. 339, 340.

A specimen of S. pubinotum was obtained by Dr. N. Annandale at Kurseong in May last. In April 1905, Colonel A. Alcock obtained a specimen of S. indicus at Sureil, Darjiling (5,000 feet). They are both new to the Indian Museum collection. Sikkim, Darjiling (Stockholm Mus.); Assam, Khasi Hills (Chennell); Burma, Karenni (Fea) are the localities mentioned by Distant for S. pubinotum, while S. indicus has "India orientalis" (Stockholm Mus.) as its locality.

Probably there are no specimens of S. indicus in the British Museum Collection, as Mr. Distant states that he was able to examine and compare this species through the kindness of Dr. Sjöstedt.

### EPIDAUS ATRISPINUS. Dist.

Distant in Blanford's Fauna of British India, Rhynchota, ii., p. 372.

Previously recorded only from Mungpoo, Sikkim (Atkinson, Brit. Mus.). Two specimens were obtained by Dr. N. Annandale at Kurseong in May last. These are the only specimens in the Indian Museum collection.

### CAPSIDÆ.

### GISMUNDA CHELONIA, Dist.

Distant in Blanford's Fauna of British India, Rhynchota, ii. p. 463.

Obtained by Dr. N. Annandale at Kurseong in May. Dr. Annandale states that in life it closely resembles, both as regards form and colour and as regards movements, a species of Chrysomelid Beetle of the genus *Nodostoma* which was taken with it. The only other locality on record is Mungpoo, Sikkim (Atkinson Coll., Brit. Mus.).

### DIPTERA.

### CULICIDÆ.

# Toxorhynchites immisericors (Walk.)

Toxorhynchites immisericors (Walk.), Green in Spolia Zelanica, ii., p. 159; Theobald, Monogr. Culic. ii., p. 123: Megarhinus immisericors, Walk. (♂), Theob., Monogr. Culic., i., p. 225, pl. vii., fig. 28: Megarhinus gile ii (♀), Theobald Monogr. Culic., i., p. 227, pl. ix., fig. 33.

Several specimens of this large Mosquito were obtained by Mr. O. L. Paiva in a garden in Calcutta. They were all found resting on the trunk of a large tree, on the afternoon of July 15th. There was only one female among them, and apparently the females are more scarce than the males. There is also a male specimen in the Indian Museum collection from the Andaman Islands; it was obtained by Major A. R. S. Anderson in July or August, 1905.

These Mosquitoes are indeed handsome creatures, glowing with

iridescent purple and blue tints, together with black and golden tufts at the apex of the abdomen. They vary very much in respect to size, and the males differ remarkably from the females

in respect to coloration.

Wherever these mosquitoes abound they will be found on the trunks of trees; Dr. N. Annandale tells me that he found specimens in the Malay Peninsula in this position, while Mr. E. Green gives the same information as regards Ceylon. I have noticed that these Mosquitoes are rather common in Calcutta during July and August. They are reported to bite very viciously in Southern India, where the bite is considered poisonous. I am unable to state with certainty whether this is the case in Calcutta, but I have been told by a lad who accompanied Mr. O. L. Paiva when the specimens referred to were captured, that he was bitten by one of them, and that the bite was painful.

A short life history of this species will be found in Mr. Green's paper (op. cit.). The study of the larvæ of this genus appears to be important, as they have been known to destroy the

larvæ of Culex.

The localities from which this species has been recorded are:—Makessar in Celebes; Weigiou; Mysol and North Ceram; Amboina; Ceylon; Travancore (James); Malay Peninsula; Nilghiri hills (Hampson); Upper Burma (Watson); Sikkim (Dudgeon).

48. Hájo and his Grandsons. (A leaf from the history of ancient Kámarupa).—By SATYARANJAN RAY, M.A., Rangpur. municated by the Philological Secretary.

Several Bhuiyas or local rulers began to govern the country The rise of west of the river Brahmaputra after the extirpation of the Khen the Koches. dynasty by Hossein Shah. The Koches, who were by far the most powerful of them, played an important part during the split up of the Khen dominions. Hájo was their leader who came into marked prominence by subjugating the whole of the modern districts of Rangpur, Jalpáiguri, Goálpárá and Gauháti. ghát alone did not yield to their power.

King Hájo had two daughters named Jirá and Hirá, both of Hájo's grandwhom were married to a Mech chief called Hariyá (or Haridás) sons. who lived in Mount Chikna. The sisters Jirá and Hirá had two sons each,—the former became the mother of Chandan and Madan,

and the latter of Vishu Sinha and Sishu Sinha.

But who was Hájo? Was he really an eponymous hero? We Is Hájo an have already stated that he was a Koch chief and the maternal eponymous hero or the grandfather of Vishu and Sishu, the ancestors of the Cooch Behar i maternal Dr. Latham, in his grandfather and Baikunthapur Rájás respectively. Ethnology of India, considers Hajo as an eponymous hero, repre- of Vishu and senting the Assam tribe of Hojái or Hajong. The Cooch Behar Sishu? chronicles, however, do not make any mention of Hájo or Hariyá, who evidently belonged to the impure tribe of Mech. The Assam Buranji, Dr. Buchanan Hamilton's MS. Accounts, and Captain (afterwards Major-General) T. H. Lewin's Account of the Cooch Behar State as well as other works, tend to corroborate our opinion. Far from disbelieving the existence of Hajo, Captain Lewin clearly states that "Hájo himself, like many other popular persons, was afterwards deified, and is worshipped in several places in Assam. The great temple of Hájo on the north bank of the river Brahmaputra attracts yearly to its shrine thousands of worshippers from Bhutan and Thibet, and is also a place of pilgrimage of the Hindus."

We find the following interesting account of the temple of Temple Hájo in the Journal of the Asiatic Society of Bengal: "A large vaulted vestibule, measuring 40 x 20 feet, in front of the old temple of Hájo in Kámráp, was built by Nar Náráyan, Hájo's great-grandson, in 1550 A.D. He found the temple entirely deserted, and almost lost in impenetrable jungle. He not only repaired it, but endowed it with lands, priests, musicians, and dancing girls. The vaulted brick addition of Nar Náráyan replaced a dismantled edifice of stone, which he had not the skill to restore. The temple is situated on a hill about 300 feet high

<sup>1</sup> Hwen Thsang, the celebrated Chinese traveller, calls it Kusha-The modern word 'Cooch' is evidently a forced contraction of Vihâra. ' Koch.'

whence, probably, it takes its name, as haju means 'hill' in the Bodo and cognate languages. From the fragments of the old vestibule a rude flight of steps has been constructed, from the tank below to the ancient fane on the hill, in which the object

of worship is, in fact, an image of Buddha." 1

Was Vishu brother of Sibrothers?

So far about Hájo. But there is a gordian knot yet untied. the elder or Was Vishu the elder or younger brother of Sishu? Were they the younger uterine brothers? Dr. Buchanan Hamilton says: "Whether Were Jirá was married or not is not known; but she had a son named they uterine Sisu, while her sister (Hira, who was married to a certain Hariya) had a son named Visu. Sisu is regarded as the ancestor of several younger branches of the family, who still possess zamindáris in British districts." The descendants of Sishu Sinha, however, declare that Sishu was the brother, and not the cousin, of Vishu. Besides, in no other account has the uterine relationship been questioned. It was but natural for the learned doctor to run into some errors, considering his race, religion, want of sufficient authentic materials and the wide difference in manners and customs of the people whose history he was collecting. regards the main point, I offer the following arguments for considering Sishu Sinha as the younger of the two. There is no doubt that the kingdom to which Vishu succeeded was by far the largest, and that it was the only kingdom which Chandan left to his successor. If Sishu was the elder brother, how could the younger Vishu supersede his elder brother's claim? Sishu was, undoubtedly, famous for his undaunted prowess and military skill. How then could his right have been set aside? How could it be that the elder brother was dubbed a Raikut 2 by the younger? How was it that the former held the royal umbrella over the latter's head at his coronation? The idea is quite repugnant from common sense and wholly irreconcilable. All the inconsistencies and incoherence of facts will be removed and a fair solution arrived at if we regard Sishu as the younger brother. In fact there are three traditions about this: viz., (1) That Hirá had two sons, of whom Sishu was the elder. (2) That Vishu was the son of Hirá (wife of Hariyá), and Sishu, the son of Jirá (her marriage being unknown). (3) That of the two sons of Hirá, Vishu was the elder and Sishu the younger. Does not the last tradition cut the gordian knot?

Traditions about Hirá.

It is said that Hirá was eight years old when she was married to Hariyá. She was much fond of worshipping the supreme Godhead Mahádeva, and people invented a fiction that Mahadeva used to visit her in the form of a Yogi as she was no other than the incarnation of the goddess Bhagavati, his divine consort. She is said to have been conceived by this divinity in

<sup>1</sup> Vide the Journal of the A.S.B. 1855, p. 9. Vide also Dalton's Ethnology of Bengal, pp. 89-90.

<sup>2</sup> As regards the various interpretations of this word and our suggestion as to the etymological and probable meaning of this technical term, a discussion will follow in a subsequent issue.

her fourteenth year and gave birth to two sons, Vishu Sinha and Sishu Sinha mentioned above.1

The origin of Hirá, from whom sprang the Cooch Behar and Origin of Hirá Baikunthapur Houses, is explained both in the Yogini Tantram as explained and Kalika Puranam in a mythological garb. We will satisfy in the Yogini Tantram and the curiosity of our readers by giving a running summary of the Kalika Puranam and whole account as embodied in the aforesaid works. The myth nam. in a nutshell is this: Once upon a time the goddess Bhagavati asked Mahádeva, after bowing her head to him in due reverence, "O God of gods, I long to hear the origin of Hirá Kochni and the Koches generally; so, be gracious enough, O Lord, to describe their full history and thereby satisfy my curiosity." Whereupon, Mahadeva, desirous of pleasing his divine spouse, began to tell her as follows: "O my dear Párvati, in Satya Yuga (i.e., the golden age), Parasuráma, the son of Jamadagni, defeated the Koch kings seven times in fight. Virya, the redoubtable Koch Chief, and his discendants, were put to death by Parasuráma. Many people of the Koch kingdom fled for their lives and began to settle at Kámapītha. They became narrow-minded and prone to low desires by a prolonged stay at that place. They called themselves 'Sankocha' whenever inquired about their caste. From this word 'Sankocha' originated the word 'Koch.' These Koches, therefore, are not low born. Their ancestors were Kshatriyas. Hirá Kochni was in her purva-janma a yogini named Mádhavi. She was born of Koch parents through the curse of a Bráhmin. Hirá tried to secure me for her husband in her purva-janma by propitiating me by hard asceticism and constant prayer. While she was thus rapt in her devotion, there came a Brahmin at her door who repeatedly begged unnoticed. Thereupon, the wrath of the Brahmin was kindled. He left the house in disgust. cursing her to be born of a Koch. Hirá, now roused to her senses, fervently implored the Brahmin to have mercy upon her. His wrath was pacified by entreaty and he departed blessing her in these words, 'Thy desire shall be fulfilled.' Thus, my love, had Mádhavi sprung from a Koch family through the curse of a Bráhmin."

It is hard to refrain from laughing as we come across the

<sup>1</sup> According to the author of the Rájopákhyána and subsequent historians, Vishu (or Viswa) Sinha was born on the 10th Chaitra, 907 B.E., corresponding with A.D. 1502. But the date of birth of Sishu is not well known. If we are required to ascertain it, we can confidently say that Sishu was not born earlier than 909 B.E., i.e., A.D. 1504. But this too is an approximate conjecture. The dates given in the Raikut-Vansa and other accounts are erroneous.

<sup>2 &</sup>quot; Parasuráma bhayát kshatri Sankochát Kocha Uchyatey."

<sup>-</sup>Yogini Tantram.

<sup>3</sup> There is an endless series of heated controversy on this doctrine. Purva-janma signifies a previous life existing before the present earthly existence.

queer legendary ratiocinations in connection with Hirá and her sons. After the spread of the Tantrik system of worship, the celestial origin of the Koches was discovered and they were even said to be descended from Kshartiyas. Some slokas were invented as coming directly from the mouth of the god Siva, which gave a far-fetched construction to the meaning of the word "Kocha." But the real truth has remained unaltered. It is known that Vishu, the son of Hirá, the first of the Koch Behár Rájás, was in fact, converted to Hinduism.

Chandan and Madan.

The four sons of Hariyá, Chandan, Madan, Vishu and Sishu, collected an army and defeated and killed the ruler of Chikna with his followers. Madan was killed in this conflict and Chandan was proclaimed king. Then the three brothers, who survived Madan, married the three daughters of the slain chief. The Rája Saka of the Cooch Behár family dates from his ascension to the throne, which took place in the year 917 of the Bengali Era, that is, A.D. 1510. Chandan subjugated the petty Bhuiyás of Kámarupa and died in 930 B.E. (A.D. 1522) after a rule of thirteen years. Vishu succeeded him, and his brother Sishu was dubbed a Ráikut after his ascension to the throne.

Vishu and Sishu. 49. On Swertia angustifolia, Ham., and its Allies.—By I. H. BURKILL.

The plants which will be discussed in the following pages are:--

Swertin nervosa. Wall.

- Swertia angustifolia, Ham. (including S. pulchella., Ham., S. affinis, C. B. Clarke, and S. vacillans, Maxim.).
- Swertia paupera, Burkill.
- Swertia exacoides, Burkill.
- Swertia trichotoma, Wight.
- Swertia corymbosa, Wight.
- Swertia zeylanica, Walker.
- Swertia Lawii, Burkill.
- Swertia Beddomei, C. B. Clarke.

-all species of India and China.

The paper is written to clear up a troublesome group in advance of an enumeration of all the species of Asia and a

discussion regarding their distribution.

At the date (1828) of the lithographing of Wallich's invaluable Catalogue of the dried plants in the Herbarium of the East India Company, the following specimens of the affinity of Swertia angustifolia had been collected :-

Specimens collected at Narainhetty in Nepal by Dr. Francis Hamilton (afterwards Buchanan-Hamilton), and

named by him Swertia angustifolia.

Specimens collected in Nepal near Khatmandoo, by Nathaniel Wallich, the Superintendent of the Company's Garden at Shibpur, in 1821 and subsequently numbered by him 4373a.

Specimens collected in Kamaon by Robert Blinkworth, an employee of Wallich, and numbered by the latter

4373b.

Specimens collected in Sirmur by Captain A. Gerard of the Company's service, who journeyed in the North-Western Himalayas from 1817 onwards surveying, and like his early companion, Dr. Govan, was a correspondent of Wallich: the last-named numbered these 4373c.

Specimens from Kamaon collected by Blinkworth for Wallich, and numbered by the latter 4373d, with the remark "S. angustifolia, var., acutangula, an distincta

species."

Specimens collected in Nepal at Protappur by Hamilton, and named by him Swertia pulchella. Wallich having

received these, numbered them 4375.

Specimens collected by Wallich in 1825 in woods of 7. Dalbergia Sissoo in the Terai of Oudh, when he was deputed to inspect forests in Rohilkand and travelled

These were numbered by him as 4376 to Dehra Dun. with the name of "Swertia elegans an præcedentis, i.e., S. pulchellæ, varietas." The exact locality whence the plant came cannot be ascertained. Wallich's Oudh specimen of Sissoo is also not localised.

Specimens collected at Prome in Lower Burma by Wallich in 1826, and named by him Swertia florida with the

number 4382a.

Specimens collected by Wallich on the hill of Taung-dong. near Mandalay, in the cold weather of 1826-27, and named by him Swertia florida with the number 4382b. Apparently Taung-dong is Taung-do, the pass up to which the road from Mandalay to Maymyo and Hsipaw goes.

10. Specimens collected by Wallich in the neighbourhood of Khatmandoo in Nepal in 1821, and named by him

Swertia nervosa with the number 4383a.

Specimens collected by Blinkworth in Kamaon for 11. Wallich and named by the latter Swertia nervosa with the number 4383b.

Specimens collected by Wight in the Nilgiri hills, communicated to Wallich who numbered them 4381 with the name Swertia trichotoma.

Out of these twelve the first fell into David Don's hands. because Don was Lambert's Librarian and had free access, with Hamilton's knowledge, to the duplicate specimens that Hamilton had sent to Lambert. David Don described the plant under Hamilton's name of Swertia angustifolia with full acknowledgment, on page 127 of his Prodromus Floræ Nepalensis (London, 1825). At the end of the description occurs the sentence "Swertia angustifolia, necnon S. pulchella et S. dichotoma, Linn. ? Hamilton MSS.," which seems to show that Don had not seen a type of Hamilton's S. pulchella.

In 1832 Wallich figured as "Swertia anyustifolia, Hamilton in Don's Prodromus," a plant which I have no hesitation in saying was the plant of his own gathering in 1821 (Plantæ Asiaticæ Rariores, iii. London, 1832, p. 2, plate 204). This plant is the number 2 above, Wallich's 4373a. Wallich states that it "grows in almost all the mountains of Nepal:" meaning by Nepal the valley of Khatmandoo and below (vide p. 3, of the Proposal for

publishing a... Tentamen Floræ Nepalensis).

The next specimens of historic interest are three obtained by Royle himself or through his collectors. They are to be seen in the herbarium at Saharanpur with the names on them of "Swertia porrigens, Rle.," "Swertia patens, Rle.," and "Swertia trichotoma,.. Rle." The sheets do not bear any information as to the precise locality whence the plants came: but the localities can be supplied from a paper by David Don on the Gentianaceæ collected by Royle, which is printed in the Transactions of the Linnean Society, vol. xvii., pp. 503-532. S. porrigens came from the Kheri pass,

i.e., from the top of the Siwaliks between Kheri in the Saharanpur district and Dehra Dun; S. patens came from Missouri, and so did S. trichotoma. With specimens and drawings Royle left India in 1832 and in the next year became Professor of Materia Medica and Therapeutics at King's College, London. David Don was then Librarian to the Linnean Society, and in 1835 he became Professor of Botany at King's College where Royle was. Royle had placed his Gentianaceæ in David Don's hands; and Don wrote the account just referred to, which was read before the Linnean Society on November 3rd and 17th, 1835, and published with references up to date in 1837: Don also wrote for Royle an account which appeared in the Illustrations of the Botany...of the Himalayan Mountains (London, 1837), pp. 276-278; before publication it was touched up by Royle; but Royle in his preface ascribes it to Don. In the same year, but certainly before the paper in the Transactions of the Linnean Society and probably before the Illustrations, appeared the fourth volume of George Don's General System of Gardening and Botany (London). Whether the Illustrations fell into the hands of the public first or the General System, it is evident that both were in the press at the same time and neither could directly influence the other. If David Don had written all three—the Gentianaceæ of the Illustrations, the Gentianaceæ of the General System as well as his own paper in the Linnean Society's Transactions—the results ought to have been consistent: but he did not. Evidently George Don took what he could from his brother David and presented it to the reader in his own way, probably to the annoyance of David, who in the Transactions quietly repudiates some of the names ascribed to him by George. Among the names published in the General System as David Don's and repudiated by David Don in the Transactions is Ophelia porrigens.

David Don had read his paper to the Linnean Society in 1835: probably it was then that George Don got the name of Ophelia porrigens and other names: and as we know that David touched up his manuscript for publication in the matter of references, so probably he touched it up in 1837 in the matter of nomenclature, and if so, he ungenerously assigned his discarded names to George.<sup>1</sup>

The paper that resulted from David Don's studies was at any rate a good and careful one, and he had rightly recognised that mone of Royle's three names were called for; that Swertia porrigens is Swertia pulchella; that Swertia patens is also pulchella; and that Swertia trichotoma (Royle, not of Wall.) is Swertia angustifolia, Ham. The adjective porrigens is such an unusual one that I wondered who had used it first: I see that it was Royle; and that the two names 'porrigens' and 'patens,' i.e., 'reaching forward' and 'spreading' were evidently given in antithesis to each other.

David Don's new genera were taken up in George Don's

I The other names are Ophelia ciliata, O. teres, Ericala carinata, E. coronata and E. procumbens. I suspect that all these were removed from the manuscript between the date of its reading and of its printing.

General System; and we find the name Ophelia angustifolia, D. Don, standing for Swertia angustifolia, Ham.; Ophelia florida, D. Don, standing for Swertia florida, Wall.; and Agathodes nervosa, D. Don, for Swertia nervosa, Wall.: but we do not get Ophelia pulchella for Swertia pulchella, Ham., but Ophelia porrigens, D. Don. The species S. nervosa and S. florida had not been described before: the names had stood as nomina nuda in Wallich's catalogue. Ophelia angustifolia is founded on the specimens of Wallich's collection numbers 1, 2, 3 and 4 above; Ophelia porrigens on specimens numbers 6 and 7; Ophelia florida on numbers 8 and 9; and Agathodes nervosa on numbers 10 and 11. Number 5 and 12 seem to have been overlooked.

In the Transactions of the Linnean Society, David Don bases his Ophelia angustifolia on the whole of the specimens so named by Wallich, i.e., on numbers 1, 2, 3, 4 and 5: and his Ophelia pulchella on number 6. He adds an Ophelia pulchella, var., minor—a combination of number 7 above with the specimen collected by Royle and named in MS. Swertia patens. I am inclined to regard Royle's plant as not varietally identical with Wallich's, but the difference between the two is very little. The specimens of Wallich's collection numbered 8, 9, 10, 11 and 12 above, are not referred to in the paper in the Transactions of the Linnean Society.

In 1839 Grisebach published his Genera et Species Gentiana-cearum (Stuttgart), and revised it in 1845 in De Candolle's Prodromus, Vol. ix. (Paris). Grisebach, like David Don, regards Ophelia as a distinct genus; and he names all the plants as in the table opposite. Swertia angustifolia, S. pulchella, S. florida and S. nervosa becoming Ophelia angustifolia, O. pulchella, O. florida and O. nervosa: Ophelia pulchella var., minor, has become O. pulchella, var., pumila.

Vol. II, No. 8.] [N.S.]			Swertia angustifolia, Ham., and its Allies.							lies.	367	
Here adopted.	S. angustifolia, var., hamiltoniana.	S. angustifolia, var., wallichiana.	S. angustifolia, var., hamiltoniana.	Ditto	Ditto	S. angustifolia, var., pulchella.	S. angustifolia, var., elegans.	S. angustifolia, var., florida.	S. angustifolia, var., pulchella.	S. nervosa.	Ditto	S. trichotoma.
C. B. Clarke in Hook. Flora.	S. angnstifolia.	Ditto	Ditto	Ditto	Ditto	S. pulchella.	S. pulchella, var., elegans.	Ditto	Ditto	S. nervosa.	Ditto	S. trichotoma.
Grisebach in DC. Prod.	O, angustifolia.	Ditto	Ditto	• • • • • • • • • • • • • • • • • • •		O, pulchella.	O. pulchella, var., pumila.	O. florida.	Ditto	O. nervosa.	•	
D. Don in Trans. Linn. Soc. xvii.	O. angustifolia.	Ditto	Ditto	Ditto	Ditto	O, pulchella.	O. pulchella, var., minor.	**************************************				•
G. Don's System.	O. angustifolia.	Ditto	Ditto	Ditto		O. porrigens.	Ditto, var.	O. florida.	Ditto	Agathodes nervosa.	Ditto	
Wall. Cat.		S. angustifolia.	Ditto	Ditto	S. angustifolia, var., acutangula.	S. pulchella.	S, elegans.	S. florida.	Ditto	S. nervosa.	Ditto	S. triohotoma.
D. Don's Prod. Fl. Nep.	S. angustifolia.	•	•	<b>:</b>			<b>.</b>		•			
Type No.	4	23	က	4	rð.	9	7	ø	6	10	11	12

Three of the Wallichian specimens are not referred to by Grisebach. He also described Ophelia zeylanica from Ceylon, specimens of which had been collected by Colonel James T. Walker who was in Ceylon from 1830 to 1840, and Ophelia corymbosa, with a variety elatior, from specimens collected in the Nilgiri Hills by Wight and the French naturalist and traveller, Perrottet. I am unfortunately unable here to say anything about Ophelia corymbosa, var., elatior,

the type of which I have not seen.

A year later than Grisebach's second work, Edgeworth of the Bengal Civil Service published in the Tran actions of the Linnean Society, xx., p. 85, a description of a new plant which he called Ophelia pratensis and had got from the Sub-Siwalik tracts, not far from Saharanpur, a plant with a yellowish flower, short acute sepals and scales over the nectary scarcely ciliate-lacerate. The type is at the herbarium of the Royal Botanic Gardens, Kew, and it is just Swertia pulchella with, if Edgeworth did not make a

mistake, a vellow flower instead of a lilac one.

Over the years before 1850 Wight had been busy in the south of India collecting material which chiefly saw the day in two works-his Illustrations of Indian Botany (Glasgow, 1850), and his Icones Plantarum Indiæ Örientalis (Madras, 1840-1853). iv. of the Icones bears the same date as the Illustrations, Volume ii., with which we are here concerned. In these two works Wight, with Arnott as co-anthor in the second, gave seven new names to plants of the group with which we are dealing, one being Swertia trichotoma, Wall., converted into Ophelia trichotoma, and another, the Ophelia corymbosa described by Grisebach.

In the "Icones" Volume IV. Plate 1329, O. corymbosa, Wight ex Griseb. Plate 1330, O. griesbachiana. 1331, O. elegans (not of Wallich).

In the "Illustrations" Volume II. Plate 157, 3a, O. umbellata. 3b, O. affinis. 3g, O. trichotoma. 3c, O. Lawii.

In the Icones he described fully the plants figured: in the Illustrations the plants are only figured to show particular points in their structure, and are not described, nor is there any information given as to their origin. The origin of Ophelia Lawii was given in the next year, 1851, by Dalzell in Hooker's Kew Journal of Botany, iii., p. 211, with a description, as the Sahvadri range, i.e., the highest part of the Western Ghats between Belgaum and Sawantwadi. Ophelia umbellata, Ophelia affinis and Ophelia trichotoma, Wight and Arnott (Swertia trichotoma, Wall., but not of Royle), went for a time undescribed: nothing but their petals and stamens having been figured in the Illustrations.

In 1850 in the Botanical Magazine, plate 4489, Sir William Hooker figured Ophelia corymbosa with its corymbose inflorescence and its lilac flower, quite a characteristic, but weak plant: Dr. Bernard Schmid had sent the seeds from the Nilgiri Hills to Kew, where the plant was raised. In 1863 in the same Journal—a volume dedicated to Wight—Sir William Hooker figured on plate 5397 as Ophelia umbellata a plant with a pale-blue veined flower and a lax inflorescence. In 1868 Sir Joseph Hooker figured on plate 5687, as fig. 3 of the plate, a lilac flowered plant received by him from Mr. I. Anderson Henry of Edinburgh—a keen grower of plants from seeds that he received from relations in the North-Western Himalaya and from friends who visited Sikkim. The first of these plants is undoubtedly the same species as Wight's Ophelia corymbosa. The second exactly matches Wight's type. The third I consider the same variety of Swertia angustifolia as

is Hamilton's plant.

Wight's Icones are not coloured: but in the attached descriptions of the species he says that the flower of Ophelia corymbosa is "blue" and that the flower of Ophelia elegans is "light blue." By blue he means lilac in regard to Ophelia corymbosa, and we have seen that Sir Joseph Hooker figures it as lilac: by light blue did he mean pale lilac, or such a pale blue (white with blue veins) as is given to S. trichotoma in the plate of the Botanical Magazine? In the Illustrations the same lilac wash is put on the petals of Ophelia affinis, Lawii, purpurascens, dalhousiana, alba, trichotoma and cordata. Some of these species cannot have been figured by Wight and Arnott from life, and it is very questionable how much reliance should be placed upon their colours. Herewith a summary of them:—

Ophelia corymbosa, said by Wight to be blue-flowered, figured undoubtedly correctly in the Botanical Magazine as lilac.

O. griesbachiana, colour not stated by Wight.

O. elegans, said by Wight to be pale blue.
 O. umbellata, figured by Wight as very pale lilac; by Sir William Hooker as white with blue veins and a blue flush.

O. affinis, figured by Wight as lilac

O. trichotoma, figured by Wight as lilac.

O. Lawii, figured by Wight as lilac; described by Dalzell as white.

South Indian Swertias (Ophelia).

Figure.	Name under which published.	In Flora British India.	Here adopted.
Wight's Illustr., 157, 3p.	O. affinis.	S. affinis.	S. angustifolia var. pulchella.
Wight's Icones, 1331	O. elegans.	Ditto	Ditto.
Wight's Illustr., 157, 3g.	O. trichotoma.	S. trichotoma.	S. trichotoma.
Wight's Illustr., 157, 3a.	O. umbellata.	Ditto.	Ditto.
Curtis' Bot. Mag., 5397	O. umbellata.	Ditto.	Ditto.
Wight's Icones, 1329	O. corymbosa.	S. corymbosa.	S. corymbosa.
Curtis' Bot. Mag., 4489	O. corymbosa.	Ditto.	Ditto.
Wight's Icones, 1330	O. grisebachiana.	S. corymbosa var. griesbachiana.	S. corymbosa var. griesbachiana
Wight's Illustr., 157, 3c.	O. Lawii.	S. corymbosa var. Lawii.	S. Lawii.

Last of all in 1883 we come to Mr. C. B. Clarke's account of the Gentianaceae in Sir Joseph Hooker's Flora of British India (London). Therein the genus Ophelia is reduced again, and becomes a section of Swertia. The Wallichian types have their names restored to them, except S. elegans and S. florida which become S. pulchella, var., elegans: Swertia pratensis is reduced to S. pulchella. The Wightian types are recognised as being too many, and they are reduced as in the above table, column 3. The species surviving, together with a hitherto unrecognised species from Southern India, S. Beddomei, are:—

S. nervosa, Wall.
S. angustifolia, Ham.
S. pulchella, Ham.,
var. elegans, C. B. Clarke.
S. affinis, C. B. Clarke.

S. Beddomei, C. B. Clarke.

S. corymbosa, Wight,
var. elatior, Griseb.
var. grisebachiana, C. B. Clarke,
var. Lawii, C. B. Clarke.
S. trichotoma, Wall.
S. zeylanica, Walker.

There is nothing historical to chronicle from India since the date of Mr. Clarke's contribution, except that Sir Henry Collett

(Flora Simlensis) 1902, p. 327, published the information, recorded before him on the collecting tickets of several collectors, that the flower of Swertia angustifolia varies to white from its usual lilac; and that Dr. T. Cooke has fully redescribed Ophelia Lawii under the name adopted in the Flora of British India of S. corymbosa, var., Lawii (Flora of the Presidency of Bombay, ii., 1904, p. 194). He states the petals to be white with blue veins, meaning undoubtedly lilac veins: this is just as I have myself found it.

The first specimens of the group found in China were described by Hance as Ophelia vacillars in the Annales des Sciences Naturelles, Ser. 5, v. (1866), p. 229. Maximowicz, commenting on a Swertia of Northern China, referred to Hance's plant as Swertia vacillans in the Mélanges Biologiques of the St. Petersburg Academy, xi., p. 269. Hance, later, having received more specimens which he wished to cite (Journal of Botany, 1885, p. 326) adopted Maxim, owicz's name, which persists in Forbes and Hemsley's Index Florae Sinensis in the Journal of the Linnean Society, xxvi., 1890, p. 141. But the plant does not differ from S. pulchella (S. angustifolia, var., pulchella).

Recently, partly because I have been working at the origin of the Gentianaceous bitters of India, I have examined all the specimens of Swertia that I could lay hands on. I have examined the collections at Kew, at the Natural History Museum, South Kensington, at Cambridge, England, at the Jardin des Plantes, Paris, at the Royal Botanic Gardens, Shibpur, at Saharanpur, and at the Indian Museum, Calcutta, while Mr. C. A. Barber most kindly has sent to me his collection from Madras and Mr. J. C. Willis his from Peradeniya, Ceylon. The result of critically turning over so much material is a very slight modification of the scheme of

Mr. Clarke, which amounts to-

S. pulchella with S. affinis, to be a variety of S. angustifolia, Ham.

The addition of two new species from the Shan plateau.

S. corymbosa, var., Lawii, to be maintained as a distinct species.

I have followed Mr. Clarke in reducing the Wightian species, but they need some further study. Wight undoubtedly made species on inadequate differences, so that his O. grisebachiana is certainly no more than a variety of S. corymbosa: his O. trichotoma in the dry state can in no way be distinguished from his O. umbellata; alive it may have differed in the colour of the flower: and his O. elegans is a sub-variety or form of S. angustifolia, var., pulchella, which we know varies to white.

#### KEY TO THE SPECIES AND VARIETIES.

Species of Northern India and Burma, S. angustifolia, var., pulchella, extending through the east of the Deccan to the very South.

Leaves elliptic, often narrowly so; sepals long and

lanceolate ... S. nervosa.

Leaves linear-lanceolate ... S. angustifolia.

Sepals exceeding the petals or equalling them. Inflorescence lax; sepals linear-lanceolate.	
very conspicuous	var. wallichiana.
Inflorescence a flat corymb; sepals equaling petals	var. florida.
	var. hamiltoniana
Sepals shorter than the petals.  Plant a foot high, more or less	
Plant dwarf	var. elegans.
eaves linear, almost needle-shaped, only one line broad; sepals short; flowers few	S. paupera.
eaves ovate, obtuse; sepals short; inflorescence subcorymbose	S. exacoides.

Plant dwarf	var. elegans.
line broad; sepals short; flowers few Leaves ovate, obtuse; sepals short; inflorescence	S. paupera.
subcorymbose	S. exacoides.
Species of Southern India.	
Inflorescence elongated, paniculate; leaves herbaceous.	
Petals obtuse or mucronate; branches of the inflorescence relatively short and very often horizontal; leaves lanceolate or linear-	
lanceolate	S. angustifolia. var. pulchella.
Petals subacuminate; branches of inflores- cence longer, sharply ascending; leaves	~
ovate Inflorescence corymbose; leaves slightly firmer.	S. trichotoma.
Inflorescence dense; pedicels short; petals subacuminate; leaves narrowed into a stalk below, often folding on themselves when dry.	
Plant robust; leaves rather broad.	
Leaves elliptic or almost spathulate; corolla-lobes elliptic-obovate Leaves ovate-lanceolate, shortly acu- minate; corolla-lobes elliptic-obo-	S. corymbosa, type
vate	S. corymbosa, var. elata.
Plant less robust; leaves narrower than	
in the type	S. corymbosa, var. griesbachian
Plant as robust as the last but leaves still	S. zeylanica.
Inflorescence dense; pedicels short, petals only	
mucronate, leaves broadly ovate-sessile, rounded at both ends, or very obtase above  Inflorescence lax; pedicels ½ inch long; petals	S. Beddomei,

mucronate; leaves deltoid-ovate, rounded at the base and not stalked

- na.
- S. Lawii.

# ENUMERATION AND DISTRIBUTION.

[A note of exclamation (!) means that the specimen has been examined.]

SWERTIA NERVOSA, Wallich, Cat. (1828) No. 4383, nomen nudum: Griesbach, Genera et Species Gent., (1839), p. 317 and in DC., Prodromus, ix. (1845), p. 125: C. B. Clarke in Hooker f.,

Flora Brit. India, iv. (1883), p. 125: C. B. Clarke in Journ. Linn. Soc. Bot. xxv. (1889), p. 48: Franchet in Bull. de la Soc., Bot. de France, xlvi. (1899), p. 315: Smith and Smith, Simla Flowers (1899), p. 40.

SOUTH CHINA.—Province of Kweichou. Near Kweiyang on the hill of the college and on the banks of the river

(Bodinier, 1960!).

South-Western China.—Province of Yunnan. Yunnansen, on the edge of rice cultivation (Ducloux, 35! 500!); fields

at Mo-so-yn (Delavay, 1234! 2935!).

EASTERN HIMALAYA.—Native Sikkim. Lachung valley at 9000 feet (Hooker!); Hi, south-west of Pemionchi, at 4000 feet (C. B. Clarke, 13037!); Kulhait valley, in the same neighbourhood at 5000 feet (C. B. Clarke, 25525!). Darjeeling district. Darjeeling, 7000—7800 feet (C. B. Clarke, 12555! 26265! Gamble! Prain's collector!); Birch hill, at Darjeeling, 7000 feet (King, 5104!); Senchal, above Darjeeling at 8000 feet (Gamble, 8451!).

NEPAL HIMALAYA.—Eastern Nepal. Valley of the Yangma, a tributary of the Tambur near the Sikkim frontier. (Hooker!); Tambur valley (Hooker!). Central Nepal.

Near Khatmandu (Wallich 4383a!).

NORTH-WESTERN HIMALAYA. — Without precise locality (Royle!), Kamaon. Without precise locality (Blinkworth in Herb. Wallich 4383b! 4383d!). Simla Hill States. Naldera near Simla (Smith).

KHASI-NAGA HILLS.-- Naga hills. Kegwima at 5800 feet (C. B. Clarke, 41181!); Thesama (Prain!); Kohima at 5300 ft.

(C. B. Clarke, 41135!).

SWERTIA ANGUSTIFOLIA, Hamilton ex D. Don, Prodromus Floræ Nepalensis, (1825), p. 127: Wallich, Cat. (1828), No. 4373, . and in Plantæ Asiaticæ Rariores, iii. (1832), p. 2, plate 204: C. B. Clarke in Hooker f., Flora Brit. India, iv. (1883), p. 125: Forbesand Hemsley in Journ. Linn. Soc. Bot., xxvi. (1890), p. 138: Knoblauch in Bot. Centralblatt, lx. (1894), p. 395: Smith and Smith, Simla Flowers, (1899), p. 40. Swertia elegans, Wallich, Cat. (1824), No. 4376, nomen nudum, not of Wight. Swertia florida, Wallich, Cat. (1828), No. 4382, nomen nudum. Swertia pulchella, Hamilton ex D. Don, Prodromus Floræ Nepalensis, (1825), p. 127, nomen mudum: Wallich, Cat. (1828), No. 4375 nomem nudum: C. B. Clarke in Hooker f., Flora Brit. India, iv. (1883), p. 125, and in Journ. Linn. Soc. Bot. xxv. (1889), p. 48: Forbes and Hemsley in Journ. Linn. Soc. Bot. xxvi. (1890), p. 140: Wood in Records Bot. Survey India, ii. (1902), p. 118. Swertia vacillans, Maximowicz in Mélanges Biol. de l'Acad. de St. Petersb. xi. (1881), p. 269: Hance in Journ. Bot. 1885, p. 326: Forbes and Hemsley in Journ. Linn. Soc. Bot. xxvi. (1890), p. 141: Franchet in Bull. de la Soc. Bot. de France, xlvi. (1899), p. 320. Swertia

affinis, C. B. Clarke in Hooker f., Flora Brit. India iv. (1883), p. 126: Knoblauch in Bot. Centralblatt, lx. (1894), p. 395: Wood in Records Bot. Survey India, ii. (1902), p. 118. Swertia sp. Griffith, Journals (1847), p. 302, and Itin. Notes ii. (1848), p. 59, No. 912. Ophelia angustifolia, D. Don ex G. Don, General System of Gardening and Botany, iv. (1837), p. 178, and in Trans. Linn Soc. xvii. (1837), p. 524: Grisebach, Genera et Species Gent. (1839), p. 320 and in DC, Prodromus, ix. (1845), p. 126: Hooker f. in Bot. Mag. (1868), plate 5687, figs. 3 and 4. Ophelia florida, D. Don ex G. Don, General System of Gardening and Botany, iv. (1837), p. 178: Grisebach in DC., Prodromus, ix. (1845), p. 125. Ophelia porrigens, D. Don ex G. Don, General System of Gardening and Botany, iv. (1837), p. 178. Ophelia pulchella, D. Don in Trans. Linn. Soc. xvii. (1837), p. 524: Grisebach, Genera et Species Gent. (1839), p. 318 and in DC., Prodromus, ix. (1845), p. 126: Franchet, Plantæ Davidianæ, i. (1884), p. 213. Ophelia pratensis, Edgeworth in Trans. Linn. Soc. xx. (1846), p. 86. Ophelia affinis, Wight and Arnott, Illustrations of Indian Bot. ii. (1850), p. 175, plate 157 bis, fig. 3b, nomen nudum. Ophelia elegans, Wight, Icones Plant. Indiæ Orient. iv. (1850), p. 8, plate 1331, not intended to be S. elegans, Wall. Ophelia vacillans, Hance in Ann. des Sciences Nat., 5me Ser., v. (1866), p. 229.

var. wallichiana, Burkill. (S. angustifolia Wall. Cat. in part, and Plant. Asiaticæ Rariores).

EASTERN HIMALAVA.—Sikkim without precise locality (Hooker!). Native Sikkim. North of the Ranjit river at 2000 ft. (C. B. Clarke, 9461!); Valley of the Rumman at 2500 ft. (C. B. Clarke 24921! T. Thomson!). Darjeeling district. Ranjit valley at 1500 ft. (King!). Between Samombong and Richi, 2000—4000 ft. (Anderson, 819!); Samombong at 4000 ft. (C. B. Clarke, 12640!); Namchi (King!).

NEPAL HIMALAYA.—Central Nepal. Near Khatmandu

(Wallich, 4373b!).

var. florida, Burkill (S. florida, wall).

CENTRAL BURMA.—District of Yamethin or Meiktila. Kyundon, in the plains (Collett!). District of Prome. Prome hills (Wallich, 4382a!).

var., hamiltoniana, Burkill (S. angustifolia, Ham.).

SOUTH-WESTERN CHINA.—Province of Yunnan. At Yunnan-fu (Ducloux, 315!); Meng-tze, on the mountains to the

south-east (Henry, 9329 A.).

SOUTHERN CHINA.—Province of Kwang-tung. Near Kanyam-ngam, on hills on the North river (Sampson!); near Tingushan (Sampson); Pak-wan-shan or White-cloud mountains (Hance, 7561!). Island of Hainan. Nam-fung (B. C. Henry!) Province of Kwei-chou. Near Gan-pin on hills in grass (Martin and Bodinier!); near Hoang-ko-chan in the subprefecture of Tchen-lin (Seguin and Bodinier!).

EASTERN HIMALAYA.—Darjeeling district. Darjeeling

(Griffith, 5832 K. D!).

NEPAL HIMALAYA.—Central Nepal. Narainhetty (Hamilton!). Western Nepal. Near the Kosi river (Winterbottom!).

NORTH-WESTERN HIMALAYA. - Without precise locality (Falconer! Parish!). Almora district. Kamaon without precise locality (Blinkworth in Herb. Wallich 4373b and d). Gori valley at Mathkot (Duthie, 2405!); near Suring at the head of the Sarju valley at 4000 ft. (Strachey and Winterbottom!); Hawalbagh near Almora (Jamieson, 547!); Almora at 5500 ft. (Strachey and Winterbottom!); Bunasur, 3000—5000 ft. (Edgeworth, 96!); Girgaon in the Manda Kini valley at 6000 ft. (Strachey and Winterbottom!); Valley of the Ramganga at 3000 ft (Strachey and Winterbottom!). Nainital district. Nainital (Meebold!) Road to Kaladhungi from Nainital (Davidson!). State of Tehri-Garhwal. Aglar valley north of Missouri (Duthie, 852); ridge between Nandgaon and Silkiara, 6000—7000 ft. (Duthie, 465!); Churani! (Gammie!). District of Dehra Dun. Missouri (Royle! Jamieson, 461! King! Duthie, 1831); Rajpur (Meebold!); Dehra Dun (Duthie, 23021!); in Jaunsar at Danich, 5000 ft. (Gamble, 27268!). State of Bashahr. Between Pasada and Rampur in the Sutlej valley, 3000-5000 ft. (Lace, 1087!). Simla Hill States. In the State of Sirmur (Gerard in Herb. Wallich, 4373c!); Shali mountain north-east of Simla, 6000 ft. (Collett, 319!); Simla (Lady Dalhousie!); on Jakko, by Simla (without collector's name!); near Thodaghon in the Patiala State (without collector's name, 25!). Chamba State. Sihunta over the Kangra valley, at 4000 ft. (C. B. Clarke, 23643!). Kashmir. On the banks of the Chenab, probably in Jamu (T. Thomson!). "Gulmarg, Jhelum valley and below Māri" (Aitchison!); Dulai, in the Jhelam valley (Meebold!). Rawal Pindi District." "Gulmarg, Jhelum valley and below Māri" (Aitchison!). Hazara district. Without precise locality (Falconer's collectors!).

KHASI-NAGA HILLS.—Khasia hills. Without precise locali-

ty (Simons!).

Plains of Upper India.—State of Kuch Behar. On a chur (Griffth!).

PLAINS OF ASSAM.—Sibsagar district. Shikarighat, 250

ft. (C. B. Clarke, 38066!).

LOWER BURMA ?—" Tenasserim and Andamaus" (Hb. Helfer 5828 K.D.!).

var., pulchella, Burkill (S. pulchella, Ham., S. vacillans, Hance, and S. affinis, C. B. Clarke).

CENTRAL CHINA.—Province of Kiangtsi. Kiu-kiang (David). Province of Hupeh. Ichang (Henry, 42! 527! 2243! 4343!).

SOUTHERN CHINA.—Province of Kwei-chou. Near Ganpin on Hills in grass (Martin and Bodinier, 1810!). Island of

Hai-nan. Tong-lang-mun (Ford's collector, 423!).

South-Western China.—Province of Yunnan. Near Yunnan-fu on the mountains (Ducloux, 350!); Ta-oung-miao on the road between Houang-kia-pin and Ta-li-fu at 4500 ft. (Delavay, 1239!); Meng-tze (Tanant!); on grassy moutains near Meng-tze at 6000 ft (Henry, 9329!); Szemao on the hills to the west at 5000 ft. (Henry, 12449!).

EASTERN HIMALAYA—Sikkim, probably British Sikkim, *i.e.*, the Darjeeling district, but without precise locality (Hooker!).

NEPAL HIMALAYA.—Eastern Nepal. Guhera river (Hooker!). Central Nepal. Without precise locality (Maries!);

Protappur (Hamilton in Herb. Wallich, 4375a!).

NORTH-WESTERN HIMALAYA.—Without precise locality (Falconer!). District of Almora. Chipla between the Kali and Gori valley (Ramsukh, 7998!); Lohaghat (Arnott); Hawalbagh (Jamieson, 547!); Ganges valley between Moneri and Barahatti 4000-500 ft. (Duthie, 1825!); Barahat (Edgeworth, 96!); District of Dehra Dun. Missouri (Royle!); Dholkot Forest near Dehra Dun (Gamble, 27438!). Kheri pass. on the Siwaliks (Royle!); State of Tehri-Garhwal. Bok hill near Missouri at 10000 ft. (Duthie, 850!); in the Ganges valley (Duthie's collector, 1189!). Simla Hill States. Without precise locality (Strachey and Winterbottom!). State of Mandi. Mandi (Edgeworth!). State of Chamba. Sihunta over the Kangra Valley at 4000 ft. (C. B. Clarke, 23643!); Kangra district. Dalhousie (Dr. Clark!).

PLAINS OF NORTHERN INDIA.—District of Saharanpur. Sub-Siwalik tract (Edgeworth, 97!). District of Darjeeling. Naksabari (Gamble, 326!) between Kuprail and Siliguri in high grass (Kurz!); District of Jalpaiguri. Siliguri at 500 ft. (C. B. Clarke, 26563!); between Siliguri and Titalya in grass land (Kurz!); between Titalya and Dunknadi in long grass (Kurz!).

KHASI-NAGA HILLS.—Khasi hills, without precise locality (Simons! Mann 267! Lobb! Herb. Kurz! Hooker and Thomson!) Gyreng (Griffith!); Mambri, between Surarim and Nunklow (Wallich!); Nunklow (Griffith, 5827, K. D!); above Nunklow (Griffith, 125!); road to Nunklow from Surarim (Wallich!); Mairang at 4500 ft. (C. B. Clarke, 16113!); Kollong Hill, south-west of Mairang (Hooker and Thomson!); Shillong 5000-6000 ft. (C. B. Clarke, 18631! 43532!); Suneassa valley below Syong (Griffith 912!); Syong (Hooker and Thomson!); Kalapani at 4500 ft. (C. B. Clarke, 16372!): Pomrang (Hooker and Thomson!). Jaintia Hills. Nartiang at 4000 ft. (C. B. Clarke, 14554!). Naga hills. Kohima at 4000 ft. (C. B. Clarke, 40920! Prain!); Thesama (Prain!). State of Manipur. Manipur, at 3000 ft. (Watt, 7361!).

CHUTIA NAGPUR PLATEAU.—Without precise locality (Schlich!). Hazaribagh district. Potaro river (Prain!); Rajabera, Sarunda (Gamble, 9120). Palamow district. Seemah Res at 2000 ft. (Gamble, 8835!). Manbhum. Koelapal in open spots in

jungle (Ball!). Singbhum. Without precise locality (Haines, 332!); Noada at 1500 ft. (C. B. Clarke, 43253!).

HILLS OF THE CENTRE OF THE DECCAN.—Jabalpur district.

Common by the river at Jabalpur (Beddome!).

EASTERN GHATS.—Ganjam district. On the hill of Mahendragiri (Fischer and Gage!); between Tickapalli and Linepada (Barber, 1221!). District of Vizagapatam. Hills west of Vizagapatam (Wight!). Godavery district. Suhmamri hill (Gamble, 15959!). District of Karnul. Karnul hills (Bed-

dome!); Nallamala hills near Karnul (Beddome!).

HILLS OF SOUTHERN INDIA.—Nilgiri district. Without precise locality (Wight! G. Thomson! Lawson!); Mudumalai at 2000 ft. (Gamble, 17872!); Tippucardu (Lawson!); Kotakambi at 5000 ft. and at 6000 ft. (Gamble, 16763! 16786! 5394!). District of Coimbatore. Anamalai hills (Beddome, 5388!); Poonachi in the Anamalai hills (Barber, 3771!). District of Malabar. Palghat (Beddome, 44! 48!); Anamalai hills (Beddome, 5397!). District of Madura. Pulney hills (Wight, 1839! Beddome, 45! 5385! 5395! 5396! Bourne, 282!); Siramalai hills, near Madura (Wight!). State of Travancore on the high range, but without precise locality (Beddome! Bourdillon, 21!).

CENTRAL BURMA. - District of Yamethin. Yin-daw (Abdul

Khalil!).

Shan Plateau.—District of Mandalay. Taung-Dong or Taung-do pass on the road to Maymyo (Wallich, 4382b!); Maymyo (Badal Khan, 266!). Southern Shan States. State of Maw, at Sa-ywa (Abdul Khalil!): State of Lai-hka or Le-gya, at Laihka (Abdul Khalil!): State of Yawng-hwe, at Fort Stedman or Taung-gyi at 5000 feet (Collett, 35! Abdul Khalil!). District of Toungu. Hill of Nat-taung (Cross, 46!); on the summit of Nat-taung (Kurz, 216!).

var. elegans, C. B. Clarke (S. elegans, Wall.).

PLAINS OF NORTHERN INDIA.—Old Kingdom of Oudh, exact locality unknown, but in the Terai (Wallich, 4376!). District of Kheri. Kheri (Inayat, 22315!); jungles of Kheri (T. Thomson!).

SWERTIA PAUPERA, Burkill in Journ. Asiatic Soc. Bengal, 1906, p. 222.

SHAN PLATEAU.—District of Mandalay. Maymyo (Badal Khan, 281!).

SWERTIA EXACOIDES, Burkill in Journ. Asiatic Soc. Bengal, 1906, p. 321.

SHAN PLATEAU.—Southern Shan States. State of Yawnghwe, at Fort Stedman (Abdul Huk!).

SWERTIA TRICHOTOMA, Wallich, Cat. (1828), No. 4381, nomen nadum: C. B. Clarke in Hooker f., Flora Brit. India iv. (1883), p. 126. Ophelia trichotoma, Wight and Arnott in Wight, Illustrations Indian Bot. ii (1850), p. 175, plate 157 bis, fig. 3g. Ophelia umbellata, Wight, Illustrations Indian Bot. ii. (1850), p. 175, plate 157 bis, fig. 3a: Hooker in Bot. Mag., (1863), plate 5397.

HILLS OF SOUTHERN INDIA.—Nilgiri district. Nilgiri hills without more precise locality (Foulkes! Wight, 1842 K. D.! Gardner! Balcock! Schmid! G. Thomson! Lawson!); Utakamand or Ootacamund, 7000-7500 feet (C. B. Clarke, 10675! 10680! Gamble 18481!); Aranby at 7500 ft. (Gamble, 15715!).

SWERTIA CORYMBOSA, Wight ex Griseb. in DC. Prod. ix. (1845), p. 125; C. B. Clarke in Hooker f., Flora Brit. India, iv. (1883), p. 126: Knoblauch in Bot. Centralblatt, lx. (1894), p. 394. Ophelia corymbo a Grisebach, Genera et Species Gent. (1839), p. 317 and in DC., Prodromus, ix. (1845), p. 125: Wight, Icones Plantarum India Orient. iv. (1850), part 2, p. 8, plate 1329, and Spicilegium ii. (1851), p. 58, plate 165: Hooker in Bot. Mag. (1850), plate 4489. Ophelia griesbachiana, Wight, Icones Plantarum India Orient. iv. (1850), part 2, p. 8, plate 1330.

HILLS OF SOUTHERN INDIA.—State of Mysore. Bababuden hills in the Kadur district (Talbot, 2402!). State of Kurg. Without precise locality (Cameron!); Brahmagiri hills at 5000 feet (Beddome, 5398!). Nilgiri district. Without precise locality (Wight! Honenacker! Gardner! Schmid! Gough! Herb Dalzell! G. Bidie!); Paikaré or Poycara (Wight!); Utakamund or Ootacamund at 7000-7500 feet (Foulkes! King! Anderson! Lawson! C. B. Clarke, 10650! 10675! Gamble, 18482!); Dodabetta at 8000 feet (Lawson; Gamble, 11539! 12991!); Aranby at 7500 feet (Gamble, 15714!); Rallia at 7000 feet (Gamble, 13132!); Kotagiri (Adam!); Mayaburam (Adam!). District of Malabar. Mamale on the Nelambur river (King!). District of Coimbatore. Bolampatti (Wight!); Kunur or Coonoor (Lawson!).

var., GRIESBACHIANI, C. B. Clarke in Hooker f., Flora Brit. India iv. (1883), p. 126; Ophelia griesbachiana, Wight.

HILLS OF SOUTHERN INDIA.—District of Malabar. Anamalai hills without more precise locality (Beddome, 5389!).

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[N.S.]

District of Madura. Pulney hills (Wight! Bourne, 310!). Kodaikanal (Barber 7242!).

var., ELATIOR, Grisebach in DC., Prodromus, ix (1845), p. 125.

HILLS OF SOUTHERN INDIA .-- Nilgiri district (Perrottet).

SWERTIA ZEYLANICA, Walker ex Grisebach, in DC., Prodromus, ix. (1845), p. 124: Thwaites, Enumeratio Plant. Zeylan. (1864), p. 205: C. B. Clarke in Hooker f., Flora Brit. India, iv. (1883), p. 127: Trimen, Handbook Flora Ceylon, iii. (1895), p. 187: Pearson in Journ. Linn. Soc. Bot., xxxiv. (1899), p. 350; Parkin and Pearson in Journ. Linn. Soc. Bot. xxxvi. (1903), pp. 437, 451. Ophelia zeylanica, Grisebach, Genera et Species Gent. (1839), p. 316 and in DC., Prodromus, ix. (1845), p. 124: Thwaites, Enumeratio Plant. Zeylan. (1864), p. 205.

CEYLON.—Central Province. Without precise locality, 6000 —7000 ft. (Walker, 651! Maxwell! Gardner, 592! Thwaites!); Hakgala at 5600 ft. (Pearson, 727!); Sita Eliya at 5800 ft. (Pearson, 231!); Moon plains near Newara Eliya at 6000 ft. (Pearson, 546!); Newara Eliya at 6000 ft. (Thwaites! G. Thomson!).

SWERTIA BEDDOMEI, C. B. Clarke in Hooker f., Flora Brit. India, iv. (1883), p. 127.

HILLS OF SOUTHERN INDIA.—District of South Kanara. Without precise locality (Beddome!). State of Mysore. Without precise locality (Lobb!). State of Kurg. Brahmagiri hills (Beddome, 5392!); Nilgiri District. Sispara ghat (Beddome, 5390! 5391! 13439!); District of Tinnevelli. Tinnevelli Hills (Beddome!); State of Travancore. Without precise locality (Beddome 5393!).

SWERTIA, LAWII Burkill.—Swertia corymbosa, var., Lawii C. B. Clarke in Hooker f., Flora Brit. India, iv. (1883), p. 126: Woodrow in Journ. Bombay Nat. Hist. Soc., xii. (1900), p. 169: T. Cooke, Flora Presidency Bombay, ii. (1904), p. 194. Ophelia Lawii, Wight and Arnott, Illustrations Indian Botany, ii. (1850), p. 175, plate 157 bis, fig. 3 c., nomen nudum. Ophelia pauciflora, Dalzell in Hooker's Kew Journ. Bot., iii. (1851), p. 211: Dalzell and Gibson, Bombay Flora (1861), p. 156.

Western Ghats.—District of Belgaum. Sahyadri ghats without more precise locality (Dalzell!); Belgaum (Dalzell! Ritchie! Burkill, 16875!). District of North Kanara.

Sambrani (Talbot, 1333!); Castlerock (Bhiva! Woodrow!);

Haliyal (Woodrow!). .

The use of the above named plants as medicinal Chiretta is, in the north of India, not very wide: but they appear to be more commonly resorted to in the Deccan, where the true Chiretta is not to be found in the jungles Over the Chutia Nag pur plateau and the Circars no other Swertia grows than S. angustifolia, var., pulchella. Wight long ago obtained it as a medicinal bitter from the hills west of Vizagapatam.

Beddome records that the root of the plant that he found at

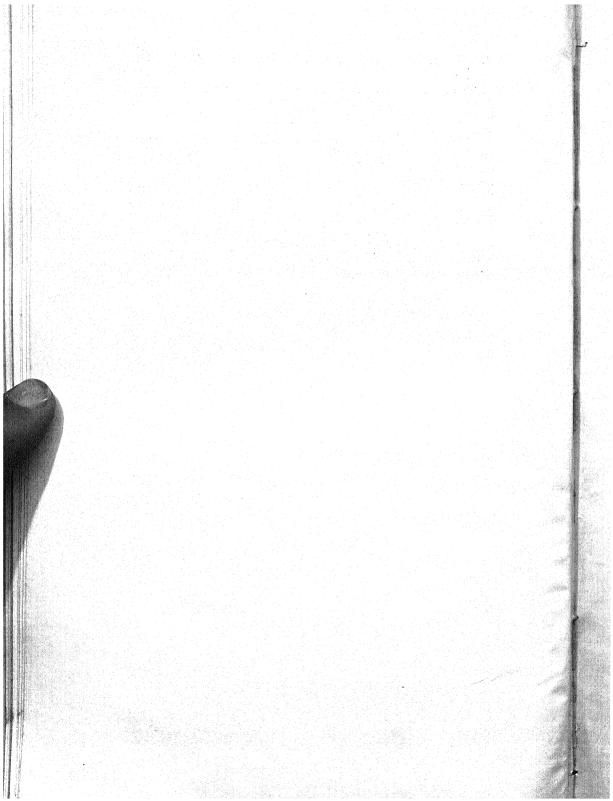
Jabalpur was very bitter.

The group has a very considerable range, occurring in the Himalaya from Hazara in the west through all the parts that we know, and in China south of the Yang-tze-Kiang to the neighbourhood of the China Sea over Canton and in the island of Hainan As a rule the species do not deeply penetrate the Himalaya. may take as the northern limit of the group the Himalaya and the valley of the Yang-tze-Kiang in Central China, which, indeed, are in the same latitudes. South of this line the group extends intermittently to Ceylon and down the mountains of Assam and Burma to the rugged neighbourhood of Nat-taung on the south-west edge of the Shan plateau. Over the greater part of the area of the group, the one species, S. angustifolia, extends. In the Himalaya and China it has with it Swertia nervosa, but not quite over the whole of the line. In the Shan plateau it has with it two segregates—S. exacoides and S. paupera. In the South of India with it are Swertia trichotoma and Swertia corymbosa. Just beyond its area are Swertia Lawii in the Sahyadri range and Swertia zeylanica in the centre of Ceylon. It is very curious that Swertia angustifolia does not occur in the Western Ghats. In the north of its area longsepalled varieties predominate; and the associated ally—Swertia nervosa—is long-sepalled: in the south of its area short-sepalled varieties predominate and the associated allies are short-sepalled. In the north of the area of the group the species have very tender leaves and are short-lived, springing up at the beginning of the rains and dying at the end of them. In the south we get firm leaves in all the species except Swertia angustifolia; and Swertia angustifolia does not occur as far south as the firmer-leaved species. anatomy of the leaf of S. zeylanica has been studied by Parkin and Pearson. It is the most xerophytic species of the group, with more or less isobilateral semi-erect leaves, and the most Southern. The species with more or less acuminate petals have a limited distribution from the Nilgiri hills southwards. In some of the Burmese plants, here assigned to Swertia angustifolia, var., pulchella, there is a tendency to acumination in the petals so that they approach Swertia trichotoma, but I have not been able to distinguish them by any good character from the true plant. The real difficulty in distinguishing species of this group centres on Swertia trichotoma, which should be carefully studied in the field to see exactly what are the best marks by which it may be diagnosed from Swertia angustifolia on the one hand and Swertia corymbosa

on the other. Swertia zeylanica may not be truly separable from Swertia corymbosa. Swertia Lawii, which is a most elegant plant when growing, strikes me as quite distinct from the rather clumsy

stout Swertia corymbosa of the Nilgiri hills.

The altitude which these plants attain is not great. It is rare for them to be found above 7,000 feet in the Himalaya, and they descend to the plains just at the foot of the Himalaya. The lowest record is 250 feet above sea-level at Shikarighat, where Mr. C. B. Clarke obtained Swertia angustifolia. Griffith found the same species on a riverine sand or shingle-bank near Kuch Behar: Kurz and Gamble have collected in the Darjeeling Terai: and Wallich and others in the Terai of Oudh. All the species love open grassy places, particularly hollows where the grass grows long; and the more tender-leaved species are found where there is a fair amount of moisture about the surface of the soil.



# NOVEMBER, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 7th November, 1906, at 9-15 P.M.

The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., Vice-President, in the chair.

The following members were present:-

Dr. N. Annandale, Babu Sasi Bhushan Bose, Mr. I. H. Burkill, Mr. R. Burn, Babu Monmohan Chakaravarti, Mr. J. A. Chapman, Mr. J. A. Cunningham, Mr. Hari Nath De, Mr. L. L. Fermor, Rev. Fr. E. Francotte, S.J., Mr. H. G. Graves, Mr. D. Hooper, Mr. W. W. Hornell, Mr. T. H. D. La Touche, Mr. C. Little, Dr. M. M. Masoom, Lieut. Col. D. C. Phillott, Pandit Yogesa Chandra Sastri-Samkhyaratna-Vedatirtha, Babu Jadoo Nath Sen, Mahamahopadhyaya Haraprasad Shastri, Mr. H. E. Stapleton, Pandit Vanamali Vedantatirtha, Pandit Rajendra Nath Vidyabhusana, Mahamahopadhyaya Satis Chandra Vidyabhusana, Rev. A. W. Young.

Visitors:—Mr. G. S. Abbott, Mr. E. Brunetti, Babu A. Das, Mr. J. M. D. La Touche.

The minutes of the last meeting were read and confirmed.

One hundred and forty-two presentations were announced.

The General Secretary announced that Kumar Narendra Nath Mitra Bahadur and Mr. E. Thurston have expressed a wish to withdraw from the Society.

The President announced that the exhibits which had been lent out to the Victoria Memorial Gallery in the Indian Museum, have been received back temporarily.

Mr. Charles Henry Kesteven, Offg. Solicitor to Government; Mr. W. B. Whitehead, I.C.S., Assistant Commissioner, Simla; Mr. F. B. Bradley-Birt, I.C.S., Joint Magistrate, 24-Parganas; Pandit Gauri Dutta Misra Vidyabhushan, M.R.A.S., Gauhati; Captain C. E. Luard, I.A., Indore; Mr. Robert S. Finlow, Fibre Expert to the Government of Eastern Bengal and Assam; and Mr. William Woodward Hornell, Assistant Director of Public Instruction, Bengal; have been elected Ordinary Members during the recess in accordance with Rule 7.

Mr. P. B. Bramley, United Provinces Police, proposed by Mr. T. D. LaTouche, seconded by Lieut. Col. D. C. Phillott; Mr. C. A. Clarke, I.C.S., Post Master General, Madras, proposed by Mr. R. Burn, seconded by Lieut. Col. D. C. Phillott; Mr. W. C. MacGabe,

Chief Engineer to the Calcutta Corporation, proposed by the Hon. Mr. C. H. G. Allen, seconded by Dr. W. C. Hossack; Mr. C. Bergtheil, Imperial Bacteriologist, proposed by Mr. I H. Burkill, seconded by Mr. D. Hooper; and Lieut. J. Inglis Eadie, 97th Deccan Infantry, proposed by Lieut. Col. D. C. Phillott, seconded by Dr. N. Annandale; were ballotted for as Ordinary Members.

# The following papers were read:-

- 1. Notes on the latitude of the Presidency College Astronomical Observatory.—By Phanindralal Ganguli, M.A. Communicated by Mr. C. Little.
- 2. A Further note on Earwigs (Dermaptera) in the Indian Museum, with the description of a New Species.—By Malcolm Burr, B.A., F.E.S., F.L.S., F.C.S. Communicated by Dr. N. Annandale.
- 3. Note on the habits of the Earwigs LABIDURA lividipes, Dufour. An add-ndum to Mr. Burr's paper entitled "A Further note on Earwigs in the Indian Museum."—By Dr. N. Annandale.
- 4. Cirrihipèdes Operculés de l'Indian Museum, de Calcutta.— Par A. Gruvel. Communicated by Dr. N. Annandale.

This paper will be published in the Memoirs.

- 5. Notes on the Houbāra or Bastard Bustard (Houbara Macqueenii).—By Lt. Col. D. C. Phillott, Secretary, Board of Examiners, Calcutta.
- 6. Some notes on the so-called Mahīpāla Inscription of Sarnath.—By ARTHUR VENIS.
- 7. Description of two Indian Frogs.—By G. A. Boulenger, F.R.S. Communicated by Dr. N. Annandale.
- 8. The Paladins of the Kesar Saga. A Collection of Sagas from Lower Ladakh, Tales 1-2.—By Rev. A. H. Francke.

This paper will be published in a subsequent issue of the Journal and Proceedings.

- 9. Some Arab Folk Tales from Ḥazṛamaut.—By Lt. Col. D. C. Phillott and R. F. Azoo.
- 10. Notes on the Pollination of Flowers in India, Nos. 1-3.—By I. H. Burkill.
- 11. Ascaris lobulata, Schneider, ein Parasitans des Darms von Platanista gangetica.—von Dr. V. Linstow. Communicated by Dr. N. Annandale.
- 12. Notes on the Freshwater Fauna of India, No IX. Description of new Freshwater Sponges from Calcutta, with a record of two known species from the Himalayas and a list of the Indian forms.

  —By Dr. N. Annandale.
- 13. Notes on the Freshwater Fauna of India, No. X. Hydra orientalis during the Rains.—By Dr. N. Annandale,

- 14. Some notes on the Maurya Inscription at Sarnath.—By A. Venis.
- 15. Indian Logic as preserved in Tibet.—By MAHAMAHO-PADHYAYA SATIS CHANDRA VIDYABHUSHANA, M.A.

These last six papers will be published in a subsequent issue of the *Journal* and *Proceedings*.

The First Meeting of the Medical Section of the Society was held on Wednesday, the 8th August, 1906, at 9-15 p.m.

Lt. Col. G. F. A. HARRIS, M.D., F.R.C.P., I.M.S., in the chair.

The following members were present:-

Dr. A. S. Allan, Lt. Col. F. J. Drury, I.M.S., Dr. W. C. Hossack, Dr. W. W. Kennedy, Captain W. McCay, I.M.S., Captain J. W. Megaw, I.M.S., Major J. Mulvany, I.M.S., Captain J. G. P. Murray, I.M.S., Major L. Rogers, I.M.S., Captain J. J. Urwin, I.M.S., and Major F. P. Maynard, I.M.S., Honorary Secretary.

Lt. Col. G. F. A. Harris, I.M.S., was elected Chairman.

- 1. Lt. Col. Drury showed water-colour drawings of a case of the red variety of Mycetoma.
- 2. Captain Megaw showed for Lt. Col. Lukis, who was unavoidably absent, coloured drawings and stereoscopic photographs of a case of Ichthyosis Hystrix (Crocker).
- 3. Major Rogers showed drawings of a case of congenital unilateral naevus in a native boy, of which only two cases have so far been recorded.
- 4. Lt. Col. Harris showed drawings of cases of Raynaud's disease, Exfoliative Dermatitis, Lupus Erythematosus and Syphilitic Psoriasis.
- 5. Major L. Rogers read a "Short Historical Note on Medical Societies and Medical Journals in Calcutta."

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[N.S.]

50. Note on the latitude of the Presidency College Astronomical Observatory.—By Phanindralal Ganguli, M.A., Presidency College Astronomical Observatory. Communicated by C. Little, Eso.

The latitude of our observatory has been found by Talcott's method to be 22° 34′ 31″ 2 N. While I was engaged in determining the azimuth constants of the clock stars, it accidentally occurred to me that  $\frac{5}{18}$  and  $\frac{1}{18}$  would respectively represent the values of the sine and cosine of our latitude with sufficient approximation.

If  $\phi$  be the latitude, i.e.,  $\phi = 22^{\circ} 34' 31'' 2$ , then  $\sin \phi = 3838979$  and  $\cos \phi = 9233756$ . Converting 3838979 into a continu-

ed fraction, we get '3838979 =  $\frac{1}{2+}$   $\frac{1}{1+}$   $\frac{1}{1+}$   $\frac{1}{1+}$   $\frac{1}{1+}$   $\frac{1}{1+}$   $\frac{1}{1+}$  ...

The successive convergents of this continued fraction are

$$\frac{0}{1}$$
,  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{2}{5}$ ,  $\frac{3}{8}$ ,  $\frac{5}{13}$ ,  $\frac{38}{99}$  .....

Similarly we get  $9233756 = \frac{1}{1+} \frac{1}{12+} \frac{1}{19+} \frac{1}{1+} \dots$ 

and the successive convergents are  $\frac{0}{1}$ ,  $\frac{1}{1}$ ,  $\frac{12}{13}$ ,  $\frac{229}{248}$  .....

It is evident that  $\frac{5}{13}$  and  $\frac{12}{13}$  are respectively the sixth and third convergent of the continued fractions.  $\frac{5}{13}$  is in excess of the value of  $\sin \phi$  by '0007175 and  $\frac{12}{13}$  is in defect of the value of  $\cos \phi$  by '0002987.

In fact  $\frac{1}{13}$  and  $\frac{1}{13}$  are the sine and cosine of 22° 37′ 11″·5, *i.e.*, of the latitude of a place which is 2′40″·3 (arc) or 3·1 miles north of our observatory. These values  $\frac{5}{13}$  and  $\frac{1}{12}$  serve all our practical purposes and are very convenient in all the numerical computations in which the latitude of our observatory is involved.

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51. Description of two new Indian Frogs.—By G. A. BOULENGER, F.R.S. Communicated by N. Annandale.

#### RHACOPHORUS TENIATUS, sp. nov.

Vomerine teeth in two oblique series between the choane. Head a little longer than broad; snout truncate or obtusely acuminate, as long as the diameter of the orbit; canthus rostralis distinct; loreal region nearly vertical, concave; nostril much nearer the end of the snout than the eye; interorbital space broader than the upper eyelid; tympanum two-thirds or threefourths the diameter of the eye. Fingers free; toes barely halfwebbed; disks moderately large, that of the third finger measuring about two-fifths the diameter of the eye; subarticular Tibio-tarsal articulation reaching the eye. tubercles moderate. Skin smooth or finely areolate above; belly granular. Purplish brown above; a narrow lighter vertebral line; a broad light band from the upper eyelid to the groin, bordered above and beneath by a dark-brown band, the lower extending over the temple and the loreal region to the end of the snout; a white streak from below the eye to the shoulder; no dark bars on the limbs; a light streak along the outer side of the tibia; lower parts white.

From snout to vent 47 millim. Two specimens from Purneah, Bengal.

Compared to R. maculatus and leucomystax this species differs in the narrower head with vertical lores, in the smaller digital disks, and in the absence of all trace of web between the fingers.

# IXALUS ANNANDALII, sp. nov.

Snout pointed, strongly projecting, a little shorter than the diameter of the orbit; canthus rostralis distinct; loreal region concave; nostril equally distant from the eye and the tip of the snout; interorbital region broader than the upper eyelid; tympanum just distinguishable. Fingers short, free; toes short, webbed at the base; disks of fingers and toes rather small. The tibio-tarsal articulation reaches the eye. Skin smooth above; a strong glandular fold from the eye to the shoulder; throat smooth; belly and lower surface of thighs granular. Greyish olive above; a dark bar between the eyes; a curved dark band on each side of the back, from behind the eye to above the groin : a dark streak below the canthus rostralis, another, vertical, below the eye, and a third from the eye to the shoulder; a dark bar on each segment of the limbs; lower part greyish, spotted or marbled with brown. Male with a large subgular vocal sac.

From snout to vent 16 millim.

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Specimens were obtained by Dr. N. Annandale in the E. Himalayas, at Kurseong, altitude 5,000 feet, in May last.

I. annandalii is closely allied to I. parvulus, Blgr., differing in the pointed snout and the smaller digital disks.

[This little frog is common in the neighbourhood of Kurseong, where it is generally found among dead leaves on the ground in open woods.—N. A.]

52. A Further Note on Earwigs (Dermaptera) in the Indian Museum; with the Description of a New Species.—By Malcolm Burr, B.A., F.E.S., F.L.S., F.G.S. Communicated by N. Annandale.

Dr. Annandale has obligingly communicated me a further box of Earwigs belonging to the Indian Museum; it does not include many species, but some are of no little interest, enough to warrant a supplementary note to my former paper on the subject (Journ. Asiat. Soc. Bengal, 1905, p. 27). As comparatively little is yet known of the Dermaptera-Fauna of India, which promises to be exceedingly rich and interesting, and as I am at present engaged upon a general revising of this order of insects, the opportunity of examining Indian material is of great value to me, and I shall very gladly welcome any further material which may be accumulated by collectors in India. These insects are interesting, not difficult to catch, nor to pack and despatch, and the good chance of discovering novelties is an additional inducement to research.

# Genus DIPLATYS, Serville.

1. gerstaeckeri, Dohrn, var. calidasa, Burr. Kurseong, 5,000 ft. E. Himalayas, 21-29. v. 60, 9518/14. Taken by Dr. Annandale.

This form has been previously recorded from Darjeeling.

2. gladiator, Burr. Calcutta, & &, Nos. 9503, 9507,—08/14; Q Q, 9496, 9498/14. A very distinct species; hitherto only known from the single male described by me in the previous paper. ["What I take to be the larvae of this species are not uncommon in Calcutta during the hot weather under flower-pots resting on stones."—N. A.]

3. siva, Burr ?. One larva, No. 9517/14, from Kurseong, E. Himalayas, 5,000 ft. 21-29. v. 06., taken by Dr. Annandale.

From its size and colour, I presume this to be the nymph of Diplatys siva, Burr, the largest and darkest member of the genus; its large size and the incipient wing-flaps, showing clearly the venation of the future wing, point to it being a nymph ready to change; of the caudal setae, one is missing; the other has 15 segments; the basal segment is very long (2.5 mm.); the next five are shorter, together approximately equalling the first; the remainder are each about 1.25 mm. long, very slender and cylindrical; the total length of the appendage is about 13 mm. and of the body 10.5 mm. The species has been previously recorded from Darjeeling.

# Genus PYGIDICRANA, Serville.

1. picta, Guer. Calcutta, & &, 9482,—84,—91,—93,—94/14, and & &, 9481,—97,—95,—9500/14, and larvae, 9460,—61,—73,—83/14. Also a female from Kurseong, 5,000 ft., E. Himalayas. 21-29. v. 06, taken by Dr. Annandale. Of this species, Dr. Annandale remarks that it is "common in Calcutta among dead leaves at the base of trees."

#### Genus FORCIPULA, Bolivar.

1. decolyi, Borm. Kurseong, at 5,000 ft. E. Himalayas, 21-29. v. 06, taken by Dr. Annandale. & &, 9511,—14/14; 1 \$\, 9515/14; larvae, 9512,—13,—1614. Of this species, Dr. Annandale remarks, "under stones at edge of mountain streams, practically in the water. When forced towards the stream, they swam rapidly on the surface; but they did not enter the water of their own accord. Their position must have rendered them liable to be submerged or washed away by sudden floods." This is the first recorded account of earwigs swimming.

#### Genus LABIDURA, Leach.

1. bengalensis, Dohrn. Calcutta, 1 2, 9492/14.

2. riparia, Pall., var. inermis, Brunner. & &, Nos. 9462,—65,—67,—69,—66,—70,—72,—76,—77,—80,—9502/14; \$\, \text{2}\, \text{9463},—68,—71/14; larvae, 9464,—74,—75,—78,—79, An. 9505-06/14:

Purneah District, 2 2, 9526, -41/14.

On this species Dr. Annandale appends an interesting note—
"By far the commonest species in Calcutta. They lie in crevices, such as those in the bark of trees, and when a small cockroach or other suitable insect passes them, the abdomen is rapidly shot out sideways and the forceps seize the insect by means of a sudden twist. The prey is then transferred to the mouth, sometimes being held also by the forceps; but should the earwig be disturbed, it runs away carrying the prey in the latter. If one individual comes upon another which is feeding, the former often attempts to steal the food. The rightful owner then threatens the other by directing its forceps towards the aggressor over its back; but I have never seen one earwig nip another, nor have I been able to induce one to nip my finger."

This is a valuable addition to the scanty records of observation on earwigs using their forceps. Much evidence is collected and published by Monsieur Gadeau de Kerville in a very interesting article published in the Bulletin de la Société Zoologique de France (1905), under the title "Note sur les fonctions des Insectes Orthoptères de la famille des Forficulidés." Such bionomic observations very greatly increase the value of a collection of

earwigs.

3. lividipes, Dufour. Purneah District, & &, 9538,—51/14. Subspecies vicina, Lucas. Purneah District, & &, 9521,—27/14; Calcutta, & &, 9485,—86,—87,—88,—89,—90,—9501, An. 9510, An. 14; Purneah District, & &, 9533,—42/14. Taken in Calcutta by Dr. Annandale "at light."

# Genus ANISOLABIS, Fieber.

1. annulipe., Luc. Purneah District, 15, 9548/14; 9 9540, 49/14.

2. brunneri, Dohrn? Purneah District, & &, 9525, -30, -31, -32, -35, -37, -39, -45, -46, -50/14. I am unable to determine this species with satisfaction; in a general absence of noteworthy characters, it would appear to approch A. brunneri, but the type was described from Tasmania; these specimens agree with some sent me from Ceylon by Mr. Green, which de Bormans himself determined doubtfully as being A. brunneri. It may be that they require a new specific name, but they seem to be chiefly characterised by negative points.

3. annandalei, sp.n.

Statura mediocris; rufo-nigra, testaceo-variegata; antennæ 16-17-segmentatæ, fuscæ, segmentis primis pallidescentibus; mesonotum elytris rudimentariis lateralibus instructum; abdomen apicem versus sat dilatatum; segmentum ultimum dorsale transversum, mediosulco sat profundo impresso; forcipis bracchia & basi remota, incrassata, triquetra, in medio longitudinis attenuata, incurva, inermia, bracchio dextro quam sinistro fortius incurvo. c.

# Long. corporis......10-12.5 mm. forcipis..... 1.75-2 mm.

Head reddish, smooth and shining, darker in the centre; sutures fairly distinct.

Antennae with 16-17 segments, typical, the basal segments

testaceous, the rest dark grevish-brown.

Pronotum ample, subquadrate, somewhat broader posteriorly than anteriorly, all borders straight, hinder angles rounded; disc somewhat tumid, but metazona scarcely noticeably more flat than prozona; median suture fairly distinct; sides distinctly reflexed; dark fuscous, varied with testaceous, especially on the borders; slightly longer than broad.

Mesonotum smooth, ample, transverse, bearing the elytra.

Metanotum normal, posterior border sinuate.

Elytra present as small, elongated, testaceous, oval flaps on each side of the metanotum; as long as the mesonotum, and about one quarter as broad.

Feet yellowish-testaceous, the femora and knees sometimes

marked with a narrow black band, which is often obsolete.

Prosternum oblong, scarcely attenuate posteriorly.

Abdomen dark reddish black, shining, very finely punctulated; somewhat flattened and broadened towards the apex (in the manner of typical A. maritima, Bon. 3); sides of the segments, as seen from above, slightly recurved; as seen from the side, pointed posteriorly, and bearing a small horizontal keel.

Last dorsal segment ample, broader than long, very finely punctulated, with a deep median impression; hinder border

roughened and truncate.

Penultimate ventral segment very large, broad and ample, well rounded posteriorly, entirely covering the last ventral segment.

Last ventral segment almost entirely covered by the preceding, visible at the corners, where a longitudinal small keel is visible.

Pygidium scarcely visible, very small, short, blunt and

rounded.

Forcep; with the branches remote at the base, stout and triquetre in the basal half; crenulate on the inner margin, straight; in the apical half, strongly attenuate, smooth, unarmed, and incurved; the right branch is a little more strongly curved than the left. I only. Q unknown.

Hab. India, Purneah District, 3 & &, Nos. 9522,—29,—34/14.

This species somewhat resembles A. mæsta and A ståli; it is larger than the latter, much paler in colour in the anterior part of the body, and the legs have not the very marked black bands of A. ståli. It also differs from A. mæsta in the paler colour of the anterior part of the body, and in the larger elytra.

I have great pleasure in dedicating it to my friend, Dr. Annandale, as a slight recognition of the interesting material

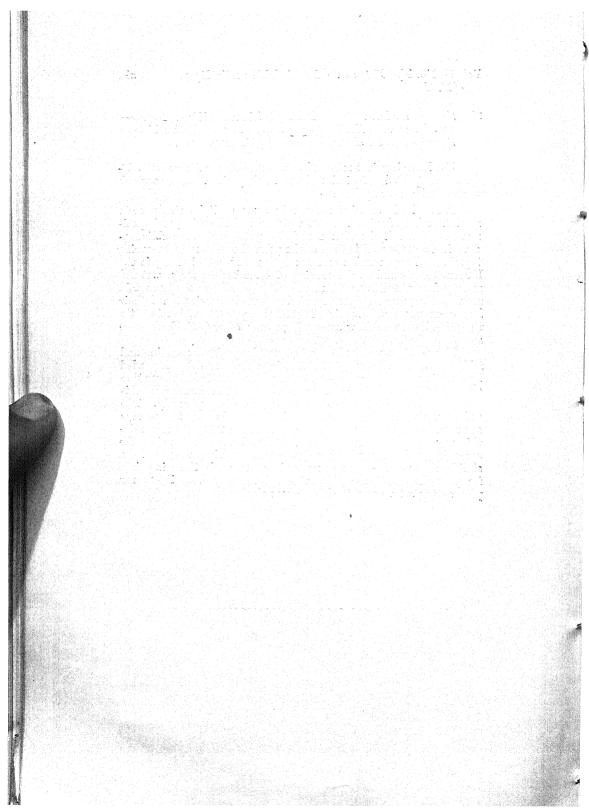
which he has brought before me.

53. Note on the habits of the Earwig Labidura lividipes, Dufour an addendum to Mr. Burr's paper entitled, "A Further Note on Earwigs in the Indian Museum.—By N. Annandale.

Mr. Burr has just returned to me further specimens of Labidura lividipes (the typical form and subspecies vicina), to which the following note applies:—

These little earwigs frequently come to light singly or in small numbers during the hot weather and the rains, and specimens can generally be taken round the arc lamps in the public gardens in Calcutta at this time of the year, the two forms occurring together. Large numbers were noted round an oil lamp in the Museum compound on the evening of June 16th, after a wet and stormy day, the first of the monsoon. Several persons have told me that they saw enormous numbers of small earwigs round their lamps on the same evening in different parts of Calcutta. On the preceding and following evenings, only a few individuals were seen.

I have often watched earwigs of this species expanding and folding away their wings. The wings are generally expanded by a rapid movement of the anterior part of the body, suggesting a shrug of the shoulders; but sometimes a hitch occurs and this movement is insufficient to stretch out both wings properly. The abdomen is then bent upwards and backwards and the forceps are used to unfold the delicate membrane. They do not seize this membrane, however, but are closed together during the operation, and are used as a lever or smoothing organ. In a similar manner they are often employed to push the wing into its place beneath the elytra, although movements of the thorax play an important part in this process also.



54. A Short Historical Note on Medical Societies and Medical Journals in Calcutta.—By LEONARD ROGERS, I.M S.

Now that a Medical Society has once more been come to life in Calcutta in shape of a section of the Asiatic Society of Bengal, the occasion of its first meeting appears to be an appropriate one for recalling former efforts in the same direction, in this, the premier seat of medical learning in India. Recently, while engaged in an examination of the older literature on fevers in India for another purpose, I was struck by the number of attempts to found medical journals in Bengal during the nineteenth century, some of which had but a short existence on account of their being dependent on the energies of one or two men, on whose removal to other spheres their offsprings came to an untimely end. The following account deals with such of these journals and societies as I have been able to find records of in the library of the Medical College, which is especially richly endowed with ancient medical literature, and I have brought a volume of each different series for exhibition to-night.

TRANSACTIONS OF THE MEDICAL AND PHYSICAL SOCIETY OF CALCUTTA, 1825-1845.

As early as March 1823 The "Medical and Physical Society" was founded in Calcutta, and in March 1825 the first volume of its transactions were published by Messrs. Thacker and Co., St. Andrew's Library, being printed for them by the Baptist Mission Press, by whom the proceedings of the Asiatic Society are still printed. It is curious to read in the preface to this volume the statement that, "It must not therefore be imagined that we are in an unexplored region, or are likely to discover new morbid conditions or indications of cure," but it was hoped that new and useful medicines might be found. At the time this volume was published 213 members had been enrolled, including most of the Bombay service as well as almost all those of Bengal and some of the Madras Presidency, so that the publications of the transactions, which included contributions from all parts of India, was rightly considered the most important work of the Society. The first President was James Hare, and the Secretary, John Adam, while the members of the Medical Board of Bengal were patrons, and the Government of Bengal allowed the Society the privilege of sending the proceedings of the meetings to its members post free during the first year of its existence. Another important feature of the Society was that both a library and a museum were started by it, the donations to which are recorded in the yearly transactions, and as at a later date Allan Webb was one of the officers, it appears to be highly probable that this collection of specimens formed the starting point of the series described in Webb's "Patho: logica Indica," and consequently of the present museum of the Medical College, in which many of Webb's original specimens are

still preserved.

The rules of the Society are printed at the end of the first volume of the transactions, from which it appears that the meetings were held on the first Saturday of every month at 8 p.m. in the rooms of the Asiatic Society where we are now gathered, and the following was the procedure: "Such communications to be laid before it by the Secretary, as had been received in the intervals. Papers to be read; and calm and temperate discussion encouraged on the subjects of which they treat. The Members will afterwards converse on professional topics in general; or communicate to the Society accounts of cases, and any interesting medical intelligence they may be possessed of." The Society was open to all medical men and veterinary officers. The subcriptions from resident members, including those at Dum Dum and Barrackpore, was Rs. 12 a quarter, and the same sum halfyearly for non-residents. The subjects for discussion included Meteorology and Medical Topography, Botany and Zoology, these subjects being well represented in the transactions, so that the functions of the Society were closely analogous to the present Natural History section of the Asiatic Society with the addition of purely medical subjects. The more important papers were circulated to the resident members before the meeting so as to encourage discussion. Medical men were admitted as visitors to one meeting only, and distinguished members of the profession elected Honorary members, some eminent foreigners appearing among them. From a special resolution adopted on the retirement of Dr. James Hare from India, it is clear that he was the real founder of this, the first Medical Society of India

This Society published yearly volumes of transactions from 1825 to 1827, and then bi-annual ones up to 1835. In 1837-8 six quarterly journals were distributed among the members, but in 1842 a large volume was published containing reprints of many of the papers of the last few years, and a ninth volume was issued in 1845, which is the last to be found in the Medical College library. The volumes each contained 500 or more pages, and included some coloured plates of rare diseases, while many of the papers in them are referred to in Norman Chevers' comprehensive "Commentary on Indian Diseases," published in 1886, so it is clear the Society had a successful career and its publications must have been of great utility in its early days when no other medical periodical appeared in India, and personal intercommunication between different parts

of the country was very difficult and slow.

India Journal of Medical Science (Corbyn's Journal), 1834-1838.

In the meanwhile a monthly medical journal had made its appearance in 1834, edited by Messrs J. Grant and J. T. Pearson, and two years later by F. Corbyn, and it is referred to in some later

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writings as "Corbyn's Journal," although its original title is "India Journal of Medical Science." It appeared regularly up to 1838, but I have not been able to find any later volumes. The tirst volume contains monthly Hospital Reports by W. Raleigh, in which the prevailing diseases and interesting cases met with at the Presidency General Hospital are described, and it is interesting to be able to trace the seasonal variations of different fevers in these descriptions of a very similar kind to those prevailing at the present day, although true malarial ones were more common in that early period than they are now. The annual volume of this journal amounted to about 500 closely printed large octavo pages, and contain some coloured illustrations of rare diseases. The journal paid its way during the first year of its existence, without any official patronage, so it evidently fulfilled awant. It is worthy of note that in 1838 the "Transactions of the Medical and Physical Society of Bombay" first made its appearance, while in the following year the "Madras Quarterly Journal of Medical Science" sprang into life, as these events may partly account for the premature decease of the pioneer Calcutta medical journal.

THE INDIA REGISTER OF MEDICAL SCIENCE.

Edited by EDWARD EDLIN, M.D., 1848.

Another attempt to found a monthly medical journal in Bengal was made in 1848, and twelve parts duly appeared during that year. Unfortunately the first four numbers are missing in the Medical College copy of this work, so I have not been able to discover the origin of this effort, although the cause of its premature decease after a single year's existence is recorded in a pathetic note to the following effect: "The uncertainty of the duration of the campaign in the Punjab and other circumstances, induce the Proprietor and Editor very reluctantly to place the 'India Register of Medical Science' in abeyance for one or two months, pending the inquiry, if any member of the profession will undertake for the profession that office of Chronicler for 1849, which it has been our pleasure to be able, however indifferently, to perform in 1848. The remoteness of the Chenab renders either literary responsibility, or literary proprietorship on the banks of the Hooghly, unadvisable." He appears, however, to have appealed in vain, and one more medical journal came to an untimely end. The volume which was published, however, contained some valuable papers, including an account of Dempster's classical inquiry into the connection of canals with malarial fevers, and his origination of the spleen test.

THE INDIAN ANNALS OF MEDICAL SCIENCE, 1853 TO 1877.

It was not long before another and more successful medical periodical was commenced in the form of a "Half-yearly Journal of

Practical Medicine and Surgery," the first number of which appeared in October 1853. Part of the plan of this journal was to publish yearly "An original report upon one of the more important and prevalent of the diseases of Tropical climates; the papers contributed by observers in various parts of India to be placed in the hands of one or more gentlemen who had made the subject under consideration their particular study, and who will arrange the materials which they contain into the form of a systematic report of the disease." Dysentery was the first subject selected for treatment in this novel manner, but although the editors appealed for material in several successive numbers, they never succeeded in carrying the idea into execution. The 37 volumes of the "Indian Annals" are two well known to require any lengthy notice here, many classical papers having appeared in them, from the first descriptions of typhoid fever in India in Europeans and natives respectively by Scriven and Ewart in 1854 and 1856, to the excellently illustrated account of Madura foot by Lewis and Cunningham in 1876.

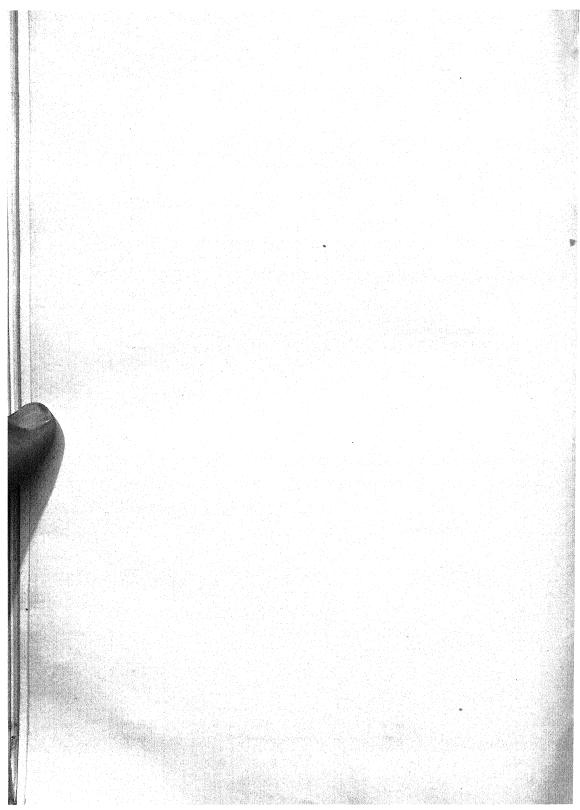
#### THE INDIAN MEDICAL GAZETTE, 1866.

The premier Indian medical journal of the present day needs but little notice here, so it will be sufficient to recall its birth in 1866 in the form which is happily still familiar to us all. That it has amply fulfilled the hopes of its founders is evident from its continued and increasing success under its present able Editor. May its weight never grow less!

#### RECENT CALCUTTA MEDICAL SOCIETIES.

. It only remains for me to briefly recall the medical societies which have existed in Calcutta during recent years, the most flourishing of which was the Calcutta Medical Society founded in 1880. Before this Society was successfully started, an attempt was made to found a Bengal Branch of the British Medical Association, a notice of which appears in the journal of November 15th, 1879; but that particular number is missing from the Medical College library, so I have not been able to examine it, the only record to be found in the journal of about that date. In one of the presidential addresses delivered before the Calcutta Medical Society, it is stated that this last institution arose from the defunct Bengal Branch of the British Medical Association. Dr. D. B. Smith was the first president of the Calcutta Medical Society, while the Secretaries were Robert Harvey and Kenneth McLeod, the last named having been most intimately associated with it during nearly the whole of its existence, the latter part of which is within the memory of many of our members. The last meeting of which I can find any record in the pages of the "Indian Medical Gazette" was recorded in the February number of 1898. The meetings were held in the afternoons at the Medical College, and much valuable work was done by it. After its decease there was no medical society in Calcutta for some years, although in the sister presidency towns of Bombay and Madras, flourishing ones exist, each of which publishes a journal of its proceedings, although the number of medical men in those cities is less than in Calcutta. Some four years ago a medical club was opened by the native practitioners in Harrison Road, where papers were occasionally read; and during the present year it has been developed into a medical society with regular meetings and a publication of its own, the first number of which has very recently appeared.

Such is briefly the history of former medical journals and societies in Calcutta as far as I have been able to ascertain. Doubtless there are omissions, which I hope some of our senior members may be able to supply. It has been a subject of just reproach that the capital city of India should have been without a medical society at the beginning of the twentieth century, but I deem it of happy augury that we meet to-night in the same room where the first medical society of India met 83 years ago; and I trust we shall long continue to carry out the duty we owe to our profession, by recording, for the benefit of others less favourably placed than ourselves, the lessons learnt day by day from the extensive experience derived from practice in the great hospitals of this city.



55. Some Arab Folk Tales from Hazramaut. By LIBUT.-COLONEL D. C. PHILLOTT AND MR. R. F. AZOO.

#### INTRODUCTORY NOTE.

The following stories are a selection of a number told to me by a Hazrami Arab in my service. They are in the ordinary colloquial dialect of Hazramaut, and were taken down in writing by Mr. Azoo, Arabic Instructor to the Board of Examiners, just as they fell from the lips of the narrator, who, together with Mr. Azoo, has more than once revised the written Arabic. These tales are interesting from an anthropological as well as from a philological point of view. The narrator is a man of some education, who fully discriminates between the colloquial and the literary speech. The peculiarities, therefore, that will be observed, are not to be condemned as mere illiterate vulgarisms: they belong to the idiomatic speech of a respectable and at least fairly educated class.

As regards pronunciation, the following points should be noted:—

is pronounced like th in the English word "thin"; is often pronounced like y, but sometimes as a slightly hard y, as in git—mosque, for instance, being pronounced either masyit or masgit; is a hard g as in the English "gun"; is and is have the same pronunciation, that of th in "though," if the th of this word is emphasized ?; is has the sound of th in "though," if the th be softened; is frequently changed into J, and I sometimes into , thus عَنْ أَنْ "we take"; occasionally is becomes J, as if for الحَدْ "he came"; on the other hand an I is often omitted, as in الحَدْ "he ate," المُعْنَ أَنْ "brother," مَعْنَ أَنْ "one," عَلَى البيت for عَلَيْ "the house"; letters are sometimes transposed, as "for عَلَى "to draw"; letters are sometimes transposed, as "to draw"; also for مُعْنَ "to draw"; be of the "to swallow."

<sup>1</sup> Or Hazramüt.

<sup>&</sup>lt;sup>2</sup> The tongue must be protruded further forward than when pronouncing the English "though."

<sup>3</sup> The  $\omega$  of the first person, plural, present tense, is always so changed-

is also common in Baghdad.

As might be expected, many of the words used are not to be found in the dictionaries. Further, many dictionary words are used in a sense quite foreign to their dictionary meanings, quite foreign even to the meaning contained in the root. The following are examples:—

"the moment"; معترب "ready"; "عمبرو "fresh-water fish" وراه "the moment" مع فيرم "as soon as"; "وم "old"; "old"; "وم "God forbid"; "وم "God forbid"; "مشيء (for أماسي "God forbid"; "منقون "to take "مشيء "to take "مشيء "to take "مشيء "to take "مشيء "to take tea"; "مأون "to take tea"; "مأون "to take tea"; مغريره (a Saker falcon) "intelligent"; "مخريره "bicycle"; (for modern Arabic مخريره "to those who will be safe or alive then") "next year, ايات الماني = مال "المن سلم "أي الماني = مال "أي الماني الماني عليه "والله "to those who will be safe or alive then" أي الماني ("to shake"; "أي الماني "والله "to those who is used for المن "the narrator continues."

The following are a few grammatical peculiarities:—

The particle بن or بن prefixed to the Aorist or Present Tense makes it Future, as بنا باروح "I am just going" or "I will go."

The genitive case is frequently formed by the word تو "property," as قد His slave." The particle تو appears to be

often redundant,7 and, unlike classical Arabic, it can be prefixed

<sup>1</sup> This may have been imported into Yemen from Haidarabad, Dakkhan.

<sup>2</sup> Classically is either a fresh-water, or a salt-water fish.

<sup>3</sup> Apparently no longer a metaphor.

<sup>4</sup> Used by the Yemeni Arabs of Haidarabad.

<sup>5</sup> Ex. اعطيك نصف المبلغ الأن والباقي لمنسلم "I will give half the amount now and the balance next year."

<sup>6</sup> Used also in Baghdad for "last year" but classically "this year."

<sup>7</sup> This 🍑 possibly is equivalent to the Hindustani to.

to a pronoun, as قدهم با يروحون "Are they going?" The pronoun of the second person singular feminine is أنك - instead of خابش , thus "thy (feminine) book," كتابش (for كتابش ) "Did he escape thee?"

Instead of the أ introducing the apodosis of a condition, is used, as الوجيت التي بالكتاب الله كالله رحت امس "Had you brought me the book, I would have gone yesterday."

The Passive of the triliteral is فَعُلُ instead of كُونُّهِ, thus, خُنُّتُ ktub for مُعَدِّد kutiba.

Verbs are sometimes incorrectly followed by prepositions thus, خطب في اخته for خطب اخته

Prepositions are used incorrectly, as "There is a break in the clouds," where is is incorrectly used for في

Words are used redundantly, as ما جاء = مَا حُد هرجا "He did not come"; مما بين شق الفارس for من الفارس In the expression شوفته "His appearance was a little appearance," that is, "he was mean in appearance," the use of the diminutive is perhaps an idiom, and not a grammatical peculiarity.

### I. THE LADY'S INUENDO.

There was once a traveller who travelled from country to country. On the day our story opens he arrived at a certain city and entered the mosque. A lady living near the mosque saw him and sent her negress to ask him who and what he was, and whence he came. The negress came to him and found him sitting in the mosque. Said she to him, "My mistress has sent me to ask who and what you are, and whence you have come." He said, "Faith, I am a traveller, and, as for my lineage, I am a Shaikh." The

<sup>1</sup> Lit. "By God!"
2 Shaikh in Hazramant "a professor" Shaikh is n

<sup>&</sup>lt;sup>2</sup> Shai<u>kh</u>; in Hazramaut, "a professor." Shai<u>kh</u> is properly a title given to the descendants of Abū Bakr.

slave girl returned with the news to her mistress. The mistress. said, "Go back and tell him that I will send him his supper." The negress did so. In the evening the lady sent him, by the hand of the negress, a cake of bread, four sets of sheep's trimmings, and a bowl full of soup, saying to the negress, "When you deliver these, say to him 'My mistress says the moon is full. the sea is at high tide, and the stars are four." Off went the negress, but on the way she stole half the loaf and one of the sets of sheep's trimmings, and drank half the soup. remainder she handed over to the traveller with her mistress's message. "All right," said the traveller. He looked well at his supper and found half a loaf, three sets of trimmings and half a bowl of soup. He said to the negress, "Tell thy mistress, that the moon was eclipsed, the sen was at an ebb, and the stars were three." The negress returned and gave this message to her mistress. Then said the mistress to her slave, "Thou hast stolen the stranger's supper." "I have not," said the negress. "How is it," said the mistress, "that he only received three sets of trimmings when I sent four? I sent a whole loaf of bread and a full bowl of soup, and only half of them reached him?" Then the mistress got up to that negress and beat her—and when I left the house she wasstill beating her.1

### II. THE STORY OF THE STUPID TURK.

There was a Turkish garrison in Mecca, which at the end of three years was relieved. The new reliefs knew not their way

about the city, so people used to guide them.

Now one day one of the soldiers went to the meat market to buy meat and vegetables. In the market he bought what he wanted. As he was carrying the meat in his hand in the open street, down came a kite and snatched it out of his hand. The Turk took out a revolver, and, finding a cock close to him, fired at it and killed it. A passer-by said to him, "Oh Effendi, what has the cock done to you?" The Turk said, "By God, a brother of his has carried off my meat." "But," said the passer-by, "this is a domestic cock, and that was a wild kite." "Never mind," said the Turk, "they are birds, both this and that." The Turk then returned to the market, bought some more meat, and cooked his breakfast—and when I left him he was still at his breakfast but he did not invite me to share it.

### III. STORY OF THE FOOLISH FATHER.

A man once married and had an only son. His wife then died. The father took pains in rearing the boy till he reached the age of eight years. Now the father was poor. One day he

I The narrator nearly always closes his stories with some personal remark of a like nature.

happened to obtain a quarter of a rival. He began talking with his son about the disposal of the money, and said to him, "We have a quarter of a riyāl, and with it we will buy a hen: the hen will then lay eggs: we will put them under her and she will hatch them. When her family grows up, we will sell the lot with the mother, for two riyāls. With these riyāls we will buy a she-goat: the goat will conceive. When she brings forth, we will rear the kid till it grows up, and will then sell it with its dam, and buy with their price a she-donkey. The she-donkey will conceive and bring forth. When the foal grows up we will sell it and its dam." "No," said the boy, "when it grows up I will ride it." Up got the father and slapped his son behind the ear. Now the man had on his finger a ring, which struck the bone, so the boy The father cried out, and the Governor's officials arrived and carried him off. The Governor said, "On such and such a day you must present yourself at the Court." The father attended on the day appointed, and was sentenced to be beheaded. After the execution, the body was borne out and buried—but I was not present at the funeral.

#### IV. THE APE AND HIS INSTRUCTOR.

A man once went out into the jungle and found a small monkey, which he seized, brought back to the town, and educated well. Now this man had a shop. One day he placed the monkey in his shop. When people came to purchase articles, they found only the monkey present. They went off and sought out the owner of the shop and said to him, "Oh So and So, we went to buy at your shop, but did not find you there." He said to them, "Didn't you find the monkey there?" They said, "Yes, as for the monkey, it is sitting there all right." He said, "Whatever you want, he will give it to you." The next day they went there, and the monkey gave them all they wanted, and they went their way. A certain man met the owner of the monkey and said to him, "Oh So and So! You have placed a monkey in your shop. Whoever comes to the shop can take anything he likes, without the monkey being able to stop him." The owner said, "I have taught him, and he wont let people carry off things." The man answered, "A bet between me and you: I'll go and rob the monkey." The owner said, "All right!" The stake was fixed. The man went off to the monkey. He sat in the shop and began to play with the monkey: he clapped his hands and said to the monkey, "Do this." The monkey copied him. Then he said, "Put your hands on your loins like this." The monkey did so. Then he said, "Put your hands over your eyes like this." The monkey did so. The man then stole from the monkey one ratl? weight, and his pen and his ink-stand, and

Riyāl the Austrian dollar, coined specially for the Arabs. Its present value is said to be Re. 1-8.
 Raţl or riţl is roughly a pound of 12 oz.

hid them in his money-bag. He then went to the shop-keeper and said to him, "Take them and give me the bet." The shopkeeper gave him the wager, returned to his shop, and chastised the monkey. Two months after the two met again. The robber of the monkey said, "Do you want me to go and rob your monkey again?" The owner replied, "Never again will he let himself be robbed." The man said, "And if I should rob him?" The owner replied, "The original bet is doubled." "All right," rejoined the other. Off he went and sat in the shop with the monkey, and did to the monkey as on the former occasion; and the monkey copied him till the man placed his hands over his eyes. Then the monkey stopped, and stretched his eyes wider open with his fingers. man said, "Not like that; put your hands over your eyes." The monkey stretched open his eyes all the wider. The man saw that he could do nothing with the monkey, so he returned tothe owner and said to him, "Here is your wager; the monkey would not let me rob him." The owner said, "Here is the amount of the first wager which you won from me; it I will take, but as to the second amount, it is not lawful for me; it is yours, take it." "Then the one went to his house, and the other to his shop. When I left them, the monkey was sitting in the shop. I bought a 'fifth" of carrots, but did not tender him the coin. I was just about to depart when he cried out, and jumped at me, and seized me by the skirt. The monkey's owner called out, "What's the matter; what have you done to the monkey?" "Nothing," said I, tendering the monkey the coin, when it released me and I went off. Now here the story ends, and peace be on high and low.

### V. THE ADVANTAGES OF EDUCATION.

Once upon a time there was a man: he married and had a The boy grew up without receiving any instruction from his father: he was an ox in ignorance. When his father died, the son married and in time had one son. This boy grew up and was taught all useful knowledge, till he had a ready answer for every question. Now one day he went to the Governor, who interviewed him, spoke with him, and approved him. The Governor asked him, "Hast thou any kith or kin; any father, any brethren?" The boy answered, "No; I have none but my father." The Governor said, "Well, summon thy father: I will fix for you both an allowance; for I desire that thou shouldst remain near me." The boy agreed, and went and brought his father. The Governor found that the father was unable to answer any question put to him. Said the Governor, "Great is the son, but base is the father!" Said the boy, "Nay: great is the son, and great is the father, but base the grandfather." Queried the Governor, "Why base the

<sup>!</sup> Khumsiya "a coin which is the fifth of something," is a copper coin, the value of one pice.

grandfather?" Said the boy, "It is so; for my father taught me everything, but my grandfather taught my father nothing." "By God! you say true," said the Governor. "Look here," he added, "such and such a house is thine, and such and such a sum is thine allowance, and let thy coming and thy going to me be at thy will; but remain ever near me." When I left them, he and his father were enjoying seventeen blessings, after having endured penury.

### VI. THE STORY OF THE ELOQUENT PREACHER.

There was once a preacher attached to a mosque, and every Friday he used to preach a fresh sermon, which he made up out of his own head. One day his wife said to him, "It is not thou that preachest and composest. It is I that preach; it is I that compose." The preacher said, "None but I can preach; none but I can compose, and there is none to compare with me; for I preach every Friday a new sermon." "Very well," said his wife. On the next Thursday the preacher took pen and paper to write his sermon. Said his wife to herself, "I will just show him, him that dares to say that it is he that preaches and composes. If he were disturbed with household matters, he could not compose a fresh sermon out of his head every Friday." The preacher began to write. His wife then went to him and said, "There's no flour in the house, there's no flour in the house. There is no butter; there are no onions; no fuel; no tamarind." While she was enumerating these things, he absent-mindedly wrote down her words in his sermon. At last he laid down his pen and went to the market, and brought her her wants. The next day, which was Friday, she said to him, "You have no clothes. Will you go to the mosque without decent clothes?" The preacher went to the market and bought himself clothes, thinking all the while that he had written his sermon. He returned from the market on the stroke of eleven, and found breakfast ready. He breakfasted. took his sermon, and reaching the mosque found the congregation waiting for him. He went in and mounted the pulpit. On looking at his sermon he saw written, "There is no flour in the house; there is no butter in the house; there is no fuel; there are no tamarinds; there are no onions." Down he came from the pulpit and said to some one, "Here, take one of my old sermons and preach it: I cannot do so," The other agreed, took a sermon, preached it, and acted as  $Im\bar{n}m.^2$  When prayers were over, the preacher went home and said to his wife, "By God! it is thou that preachest; it is thou that composest—and here are the keys: do what thou likest in the house, and let me alone to ponder on the mosque and its Fridays." The woman took the keys saying, "I

<sup>1</sup> Seventeen; a local idiom. The reason for this particular number is not known.

<sup>2</sup> i.e., Leader in prayer.

told you so. Who's right and who's wrong?" And when I left them they were still wrangling.

### VII. THE ARAB DOCTOR'S DEVICE.

There was an Indian of Haydarābād who fell from his horse and dislocated his hip. He visited various doctors, but none could help him. An Arab advised him, saying, "Journey to Arabia, and the Arabs will cure thee." The man agreed and took a letter of recommendation to a certain man of Shibr.\(^1\) He journeyed till he came to Shibr, where he presented his letter. The addressee said, "There are Beduins in the desert of the tribe of Humām who visit this town, and they are noted for their medical skill."

So he sent a messenger to the market to ask if any of these Beduins were in the town. He was told that there were. sent for one and showed to him the Indian. The Beduin asked, "How many years is it since your fall?" The Indian replied, "Four years." The Beduin said, "None can cure thee but So and So: he is now in the desert, but will come hither in three days." The Indian said, "Very well, I'll attend his coming." On the third day, the Beduin, whose name was mentioned, arrived, and the Indian was shown to him. He said to the Indian, "I will treat thee, but thou must come out with me into the desert." The Indian agreed. Then said the Beduin, "Take with thee a bull and two dollars' worth of dry salted fish,2 and one dollar's worth of millet stalks; and to-morrow we will start." The Indian bought these things and went out into the desert in company with the They reached the Arab camp. The Beduin said, "For three whole days give the bull no water to drink; and feed it on the salt fish and millet stalks." "Certainly," said the Indian; and he did so. On the fourth day the Beduin came and saw that the bull's sides had collapsed and were touching each other. He said, "Bring out the Indian," and then filled a large earthen receptacle with water. He mounted the Indian on the bull's back, and tied his ankles firmly together. He then let loose the bull at the water, and the bull began to drink. Its belly took the shape of a bow and the legs of the Indian became stretched and parted. "Release me, release me," shrieked the Indian. "Patience," said the Beduin; and he released him not until his hip went in with a Then he untied his legs, and carefully dismounted the Indian from the bull's back, and laid him on a bench, and kept him there for forty days, feeding him on ram's flesh and Indian corn, but giving him no salt.3 The Indian recovered and departed from the Arabs to India, after having well rewarded the Beduin. He

<sup>8</sup> Salt is injurious to those who have met with an accident.

<sup>1</sup> Shihr the S. portion of the sea-coast of Hazramaut.

<sup>&</sup>lt;sup>2</sup> Horses, sheep and cattle are fed on this salted fish, but it is generally considered by the Arabs too salt for human consumption.

went to Haydarābād, but I know not what happened to him there, for I did not happen to meet him—and peace is the best of endings to everything.

### VIII. WINE, THE ROOT OF EVIL.

There was once a Fagir who lived alone in the wilderness, travelling from valley to valley. One day, emerging from a valley, he lost his way and wandered about in the open plain. For three days he had nothing to eat or drink. On the fourth day he reached an open space in which he spied a dwelling. He exclaimed to himself, "Assuredly!! I'll get food and drink in this house." Going towards the house he found that it had four gates. Now this house belonged to a Jew. As he was about to enter a gate, a sentry stopped him saying, "I will not let thee enter unless thou murder this child here." The Faqir said, "I take refuge in God from murder!" He then went to another door and found some one standing there, keeping guard over a girl of fifteen years. As he was entering, the sentry stopped him saying, "Thou hast no permission to enter unless thou embracest this girl." The Faqir exclaimed, "I take refuge in God from lechery!" He then went to the third door, and found one at the gate with wine. As he was about to enter, he was stopped by the sentry, who said, "Thou hast no permission to enter unless thou drinkest a cup of wine." The Faqir said, "This also is a misfortune." He then went to the fourth gate, and found there a man with pork. As he was about to enter he was stopped. "Why?" asked he. The other said, "Take as much as you want of this meat and then enter." The Fagir exclaimed, "What a misfortune is this into which I have fallen this day!" He went off and sat under a tree, thinking which of the four acts was the easiest. He settled on wine; so he went to him with the wine, and said to him, "Hand thy cup." He was given a draught. He then entered and found food and water, so he ate and drank. After that he turned to looking over the premises. He arrived at the gate where was the little boy, and said to the guardian, "What is this boy?" The guardian answered, "He is here to be killed by any one who likes." The Faqir said, "I am the one to slay him." Now the wine was buzzing in his head, so he seized the boy by the neck and broke it. The boy died.

He then went to the gate where was the girl, and said to the sentry, "What is this girl?" The sentry replied, "She is for him who chooses." The Faqir said, "I will take her." "Do so," said the sentry. Then our friend went in to the damsel.

After that he repaired to the third gate where was the wine,

<sup>1</sup> Lit. " By God ! "

<sup>&</sup>lt;sup>2</sup> The idea is that wine makes a man commit senseless crimes; it is sufficient to merely suggest a crime to a man in drink.

and took of it a second cup. Thence he went to the gate where was the pig's flesh and asked the sentry, "What is this nice meat you have? Is it for sale?" The sentry said, "This is for any that chooses to eat it." Said the Faqir, "Have I permission to eat it?" "You have," said the sentry. The Faqir ate his fill of the meat. After that he began to illtreat the inmates of the house till they drove him forth from the house. He went off and wandered in the wilderness.

Next day he came to himself and reached a certain town, and he was full of repentance for what he had done. He entered a mosque and found the Muazzin. The latter said, "Hie, So and So! whence comest thou?" The Faqir answered, "Actually! from the wide world. And a thing has happened to me that has happened to none as yet." The Muazzin said, "Thy news. What has happened to thee?" The Faqir then related the whole of the tale. Said the Muazzin, "O thou of little sense! Hadst thou accepted the girl in the first instance, or else murdered the boy, thou wouldst not have been guilty of all four crimes; but thou shouldst have known that the moment thou drankest the wine, all the others would follow."

He continued, "Ask pardon of thy God, and resolve never to repeat the offence; for Allah is Forgiving and Merciful." The Faqir departed, and I do not know what wilderness swallowed

him up.

#### IX. WHO CAN TELL THE BIGGEST LIE.

One day four Arabs met together to tell each other nighttales. Said one of the four, "I make a proposal, and he who falls short of the mark, let him be the loser." "Say on," said the rest. He said, "Let us each produce a lie and see whose lie is the biggest." They said, "Do you begin." "All right," said he. Now he was a poet, so he recited:—

"Alas for me, the day I fail in lying!
I spied a man cupping a man with a firkin.
Poor wretch am I who had to dig thirty wells with one needle."

Said one of them, "You are a poet, but we number no poet amongst us: if you like, we will speak in prose." He replied, "Lie in prose—if any of you can." Said one of them, "Seven camels had I, and one of them was mast. I placed this one at the head of the string and pushed through a pass, leading the string of camels. I reached the top of the pass and continued my way on the plateau. I left the camels for a minute, for a purpose, and the leader began to 'bubble.' Down come a hawk, and seizing the "red tongue," bore off the whole string, and disappeared in the blue sky, and I knew not whither the hawk bore them: I lost them."

<sup>1</sup> Lit. "By God !"

<sup>&</sup>lt;sup>2</sup> The word "tongue" is used in default of a better.

Said the third, "Have you finished?" "Yes," he replied. The third then said, "I was with  $B\bar{a} Dahr\bar{\imath}$ , and the Autumn passed without there being any flowers for the bees. Then the bees swarmed and went to Wadi Haul 2 and alighted on a ber 3 tree, and uprooted it, and, bearing it through the air placed it in the village of Bā Dahrī. There the bees planted it, and used to gather their honey from it; and that year they produced honey such as they had never produced before. Now I was present when the honey

was boiled, and Bā Duhrī gave me a large measure of it."

Said the fourth, "A woman went up from Wādī Ḥaul to the top of the pass, collected as large a bundle of wood as she could bear, tied it, and went to drink water from a pool. A cloud came and entered the bundle, and she knew not of it. She lifted up her wood and went to her house, and carried it up on to the roof. That night lightning flashed and thunder rolled Said people, "Whence comes this thunder?" Some said, "It is in the house of So and So." They went and asked the owner, "What's the matter?" Said the owner, "All I know about the matter is, that 'my wife went out and brought back a bundle of wood; and it seems that she brought a cloud inside it without our knowing of it. The first thing we knew was the thunder and lightning above us." Then the master of the house closed his doors and windows, 5 and the flood swept down the stairs, and in one night so inundated Wādī Ḥaul that the roots of the her trees were laid bare; and it was by their being bared that Bā Dahrī' bees were able to uproot that tree."

When I left those four, each was claiming to be the greatest liar.

### THE RELIGIOUS SUBTERFUGE.

A man once married, and his wife conceived. He swore by the triple divorcement that if a male-child were born, he would sacrifice, as a ransom, a ram with a tail seven spans in length. In due course a son was born to him, and he sought high and low for a ram with a tail of the required length, but could not find one. He returned home, and found his father-in-law 6 in the house. The latter saw from his face that he was upset and said to him, "How is it you are like this, Oh So and So?" The husband said, "By God, thy daughter is divorced from me!" Said

<sup>1</sup> Ba Dahrī and his family are said to be famous in Hazamaut for their

<sup>2</sup> Wādī Haul is said to be a wādī, a day's journey from Raydah the village of Ba Dahri.

<sup>3 &#</sup>x27;Ilb is said to be the Indian ber.

<sup>4</sup> Lit. "By God!"
5 Abwāb "The doors and windows" (with the exception of the sudda or street door).

<sup>6</sup> A wife being generally cousin is called Bints Ammi, "Daughter of my uncle"; hence a father-in-law is called 'Amm, which is properly uncle.

the father, "For what?" Said the husband, "I made the oath that if we had a son, I would ransom him by a ram, whose tail should be seven spans, and I can find no such ram." The woman overheard the conversation between her husband and her father and said,

"Span with the span of the babe, at your will,
And beware of the vow that is hard to fulfil."

They went and procured a large-tailed lamb, and measured its tail by the spans of the babe, and the tail proved to be even more than seven spans in length; so they slaughtered the ram—and it was I who distributed its meat to the poor.

### XI. THE TURBANED BULLS.1

There was once a  $Q\bar{a}z^{\bar{i}}$  who had two sons; one was nimble-witted and anticipated the words from the speaker's mouth, but the other was only middling. One day the  $Q\bar{a}z^{\bar{i}}$  called his sons and said to the one without talent, "Go and bring me two bulls with their turbans on." "I obey," said the son, and went out to the market. He went all round the town searching for bulls that had turbans on, but found none. He then bought two turbans, and seizing two bulls, bound their heads with the turbans, and took them to his father. Arriving at the gate, he left the bulls outside, and went upstairs to his father, and said to him, "I have brought the bulls." Said his father, "Where are they?" Said the son, "Outside." The father looked out of the window and saw the bulls, turbaned as they were. Said he, "Whence have you brought them?" Said the son, "The turbans, I bought; but the bulls I just led away from the market." Said the father, "Ah! the pains that I have taken in thine education! Go, remove those turbans and release those bulls."

Said the  $Q\bar{a}z\bar{i}$  to his second son, "Go, bring me two bulls with turbans on." Off went the lad, and found a man with a turban as large as a clothes-basket. He said to him, "Of what sect are you?" Said the man, "I am a cultivator by sect." "Right," said the boy, "my father summons you." The two then went on together and met a second man with a big turban. Said the boy, "What is your sect?" Said the man, "I'm of the  $Sh\bar{a}fi^{\dagger}\bar{i}$  sect, and as to my occupation I'm a  $Qab\bar{i}l\bar{i}$  of the tribe of Murrah." The boy left him. He found a third and asked, "What is your sect?" Said the man, "By sect I am a carpenter." Now this man had a turban as large as the first man's. Said the boy,

<sup>1</sup> In Arabic a "turbaned bull" is a metaphor for a "stupid ass." 2 Lit. 'He caught the sounds as they flew.'

<sup>&</sup>lt;sup>3</sup> Qabili, one whose profession is war, i.e., all except artisans and cultivators; here the 'Ulama' or Shaikhs are included in the gabili.

"Right; my father wants you." He went with them to his father and took them up to the reception room. Said his father, "Have you brought the bulls?" Said the boy, "Yes." "Where are they?" said the Qāzī. "There they are," said the boy. Said the father, "I told thee to bring me bulls, and thou hast brought me men." Said the boy, "My father, these are two of the bulls from amongst men." Said the father, "Are there bulls amongst men?" "Certainly," said the boy; "there are amongst them, bulls, and asses, and dogs and so on." Said the father, "And how did you come to know that these particular men are bulls?" The boy narrated what had passed, and added, "He who knows not his hand from his foot, is a bull." Said the Qāzī, "And who are the asses?" Said the boy, "They that sing at dusk." "And the dogs?" "Those that plunder people without right." Said the father, "Well, now I know that thou art my son, but as for him, he's a mother's darling."!

#### XII. THE SLAVE AND THE PUMPKIN.

A certain man had a very stupid slave. Now the slave owned a bed of pumpkins, which he visited frequently in dread lest any should be stolen. One day he was seated near them when a passer-by 2 saluted him, but getting no answer again saluted. The slave ignored the salute. The passer-by then went straight to the slave's master and said, "So and So! to-day I passed by your slave, who was sitting on the ground, and I saluted him; but he would not return the salutation, and I know not what is the matter with the slave. Now you must find out about him, as next time he may kill me or beat me; for he is an unreasoning creature." Said the master, "How is that? Is there any ill-feeling between you two?" Said the man, "No." Said the master, "All right." At night the slave returned, when his master said to him, "So and So passed by thee and saluted thee-and thou didst ignore his salute? What is there between thee and him?" Said the slave, "Master! there is nothing between us." Said the master, "Why didst thou then not return his salute?" He answered, "My master, saluting leads to talking, and talking leads to taking pumpkins."8

### XIII. THE WISE BOY AND THE FOOLISH ONE.

There was once a man who had a clever son. One day he said to his son, "To-day we will visit the chief." Said the boy,

<sup>1</sup> Lit. "The son of his mother," hence a mother's darling, soft and useless."

<sup>2</sup> A passer-by must first salute one stationary.

<sup>3</sup> This saying of the slave has now become a proverb.

"All right." They then sat down to their breakfast of rice. Two grains of rice fell and stuck in the old man's beard without his knowing it. They then went to the chief, and entering the reception room found there a number of people. The boy then noticed the two rice grains in his father's beard. He said, "Father, there is a gazelle in the garden." His father said, "We have sent after it the five expert shots," and passed his hand over his beard. Now there was seated near another man with his son. When the guests departed, this man said to his son, "Didst thou hear what that boy said to his father? Now to-morrow I will put something into my beard, and when we are seated speak to me as that boy did, so that people may say, "What an intelligent boy is So and So's son!" Said the boy, "I will."

The next day these two were present at the reception, and the father had put two grains of rice in his beard. After the guests had assembled, the boy addressed his father, "Father, the thing you mentioned yesterday, see, it is in your beard." Said the father to him, "God curse thy mother, thou ox."

### XIV. THE JESTER.

There was once a destitute Hazrami, with nothing to put under him and nothing to put over him. He journeyed from Yaman and reached San'ā = 3 where was a Bāshā, who had in his service three men to make him laugh: these used to tell him funny stories. The Hazrami went to the Bāshā. When the latter saw him, he said, "Whence comest thou, young man?" He said, "By God,5 from Hazramaut." Said the Bāshā, "Thou art a Hazramī?" He said, "Yes." Then they conversed together, and the Hazrami's speech pleased the Bāshā, for the Hazramī was quick-witted. The Bāshā then took him into his service and drove off his three Yemenite jesters, and would no longer permit them to come near him. These three then met together and consulted. Said they, "What are we to do about this Hazrami; he's come from Hazramaut and cut off our livelihood, which we got from the  $B\bar{a}sh\bar{a}$ . We must devise a 'poser' that will make the  $B\bar{a}sh\bar{a}$  dismiss him." "And what will be a poser?" said they, "I know a 'poser,'" said one; "I will say two lines of poetry, the last foot of which shall not be a word." Said they, "Recite the lines; let us hear them." He did so. Thereupon they exclaimed, "Come, we'll go to the Bāshā." They went to him

<sup>1</sup> Buston, "Garden," in Arabic gives the idea of a place full of trees and is also as Arab simile for a beard.

<sup>2</sup> i.e. an inhabitant of Hazramaut.
3 The capital of Yaman.

<sup>4</sup> The Arabic form of the Turkish Pāshā.

<sup>5 &</sup>quot;By God": if the speaker merely replied, "From Hazramaut," his speech would be curt. "By God" is simply used to avoid brusqueness.

and he said, "What has brought you?" They said, "We have come for this Hazrami. We'll tell him two lines. If he caps them, we'll be as we are; but if he can't cap them then he must go off and we will return to our former service." "Right," said the Bāshā; "I'll consult the Hazrami." Said the latter, "There is no need to consult me; I'll answer them." The Bāshā said to the men, "All right, to-morrow at noon present yourselves; and I will make proclamation that people may come and hear your verses." He, accordingly, had the matter announced to the people of San'ās.

The next day, people came together. After they had assembled, the Yemenites entered. Said the  $B\bar{a}sh\bar{a}$  to them, "Ha! how have you progressed? Are you going to recite your verses or are you not ready?" They said, "No, no, we are ready." "Come on, speak," said the  $B\bar{a}sh\bar{a}$ . Then he who was to speak

the lines came forward near to the Bāshā and said:—

"I passed by a perfumer selling 'ifr, musk, and camphor.

I said to him '---' [he snuffs up].

So the perfumer said to me, 'Give back my itr and musk and camphor.' So I said '---' " [he blows here through his nose].

Up got the Hazramī and said, "Hear all ye present! You have heard the lines of the Yemenite: hear the answer":—

"I passed by a traiteur, selling bread, beans, and cucumbers.2 So I said to him [here he makes a swallowing noise].

Then said the truiteur, 'Give me back my bread, my beans and cucumbers.' So I said to him '---'" [here he makes a noise of retching].

Then up jumped the Yemenite and began to abuse the Hazrami; "God curse thy country! God curse the land that has reared thee, Pander and son of a Pander." Said the Hazrami, "Do not abuse me, abuse the Bāshā, who drove you from him."

Some time after this, the \*Hazramī\* took leave of the \*Bāshā\* and journeyed towards Mecca. On the road, robbers met him and robbed him of all he had. He proceeded towards Mecca quite destitute. When he arrived in Mecca, he could find none to give him food. Said he to himself, "I'll devise a stratagem which will produce me food." Now he had with him a wine-skin. He filled it full of camel dung gathered here and there, tied up the mouth, and went round the streets, seeking for some one to trick.

Now by chance there was there an Egyptian, who was also destitute and unable to procure his evening meal. He too had a skin. It occurred to his mind too to trick some one; so he took the skin he had, and filled it with ashes, and went to another street, and began wandering about. He and the Hazramī met. Said the latter, "What hast thou there, Egyptian?" The former said, "Faith, I have flour for sale—if you want any; but what hast thou, Oh Hazramī?" Said the Hazramī, "I—

<sup>1</sup> In the original, "The Hazrami," for emphasis.

<sup>&</sup>lt;sup>2</sup> Faqqus, a kind of large cucumber. 3 Lit. "By God!"

I have dates." The other said. "What savest thou to thy giving me thy dates, and to my giving thee my flour?" Said the Hazrami. "All right," The Hazrami took the skin of the Egyptian, and the Egyptian took the skin of the Hazrami, and each went to his lodging. The Hazrami untied the skin to knead flour and make bread, but found in it only ashes. He burst out into abuse of the Egyptian. The Egyptian reaching home undid the skin of the Hazrami, inserted his hand to take out some dates to eat, but found only camel dung. He burst into abuse of the Hazrami. So amongst the Arabs it has become a proverb. "The thief of Egypt and the thief of Hazramaut" (are a pair).1

### XV. THE SLAVES THAT WENT OUT SHOOTING.

(A story to illustrate the stupidity of Negroes).

One day four black slaves met together and said, "We will go out and shoot in such and such a nullah." They started off and reached the head of the nullah; but seeing some ibex, off they bolted in fear, exclaiming, "Lions, lions! No game is this; game is something small." They reached the bottom of the nullah, where they scattered. One of them came across a rat. He fired at it and hit it, and shouted to his companions. They came to him and saw the rat. Said one of them, "How didst thou escape its eyes? 3" Said he, "God preserves." Said another, "How didst thou escape its feet 8?" Said he, "God preserves." Said the third, "How didst thou escape its head 3" He said, "God preserves." They then took up the rat, and bore it to the village, and entered the village chanting the hunter's chant.<sup>4</sup> People met them and said, "What have the Abū Suwayds <sup>5</sup> got?" Said the slaves, "We have an ibex?" Said the village-people, "What kind? Let us see it." They looked at it, and lo it was a rat. People laughed out at them. Said one of the slaves, "What is the matter with you my masters that you are laughing so?" Said one, "It is now four months since any one got an ibex—but thou hast done so to-day, Oh Abū Suwayd." The slave pulled himself up in pride. Now this is the story of the slaves that went out shooting.

### XVI. BĀ DĀHIYA, THE SKILLFUL PHYSICIAN.

One day a Bedouin drank some camel's milk in which there happened to be some camel ticks. The ticks fastened to his liver

Also Diamond cut diamond. 2 Lit. "The game." Ibex and gazelle are the only big game in Hazramaut.

<sup>3</sup> These questions are in imitation of the foolish talk of negroes. • Chanted only by successful hunters: vide note 6, page 434, in Arabic text 5 Lit. "Father of the Little Black," a designation of a negro.

and he lost condition day by day. At last he determined to go and see  $B\bar{a}$   $D\bar{a}hiya$ . When he went to him,  $B\bar{a}$   $D\bar{a}hiya$  just looked at him and said, "Bring me a bit of camel's liver." A piece of the liver was brought. He took the liver, tied it to a long thread, and said to the Bedouin, "Swallow it." The sick man swallowed the piece, but  $B\bar{a}$   $D\bar{a}hiya$  retained the end of the thread in his hand. He let the liver remain for a quarter of an hour in the sick man's inside, and then hauled it up. The ticks were sticking to the bit of liver, and the sick man gradually recovered his health.

Bā Dāhiya was asked why he had not asked for a piece of the liver of some other animal. He said, "When ticks scent the odour of a camel, they loose their hold on other animals and make towards it. It struck me that the odour of a camel could draw out the ticks from his stomach."

These are the particulars of the story of the Physician, and it is, I swear, a true story and happened in  $Qayd\bar{u}n$ , the capital of  $Shay\underline{kh}$   $Sa'\bar{\imath}d$  bin ' $\bar{I}s\bar{a}$ , in the  $W\bar{a}d\bar{\imath}$  of Do'an in Hazramant.

### XVII. THE INGENUITY OF WOMEN

There was a man that dwelt in the town of Raidah the chief town of the Din tribe, and he had a beauteous daughter. Said he to himself, "I will never marry my daughter except to a man who will solve three questions that I put him: What is the strongest thing? What is the moistest thing? and What is the nicest thing?"

There came one asking the damsel in marriage. Said the father, "I will not give thee my daughter, except thou reply to my three questions"; and he put them, granting the youth a respite of three days in which to answer them. The youth departed. He could find no answer to the three questions. Then came another to woo the maid, and the father spoke to him as he had spoken to the first. Now the girl got a glimpse of this youth and he pleased her. She said to her negress, "Go to So and So, and ask him what my father said." The negress went to the youth and said, "My mistress salutes thee, and asks what her father said to thee." He said to the negress, "Commend me to thy mistress and tell her that I asked her in marriage, but her father said that only if I could answer these three questions would be marry me to his daughter." The negress returned to her mistress, and gave the whole message. "All right," said the mistress; and she took pen and ink, and wrote, "What is strongest is the horse; what is moistest, is the south wind; and what is nicest is love"; and she sent this note to the youth.

The youth took the note, and on the appointed day presented himself. Said the father, "Ha! this is the appointed day? You've found the answers?" Said the youth, "Yes." Said the father, "Speak." The youth said, "That which is strongest is the horse; that which is moistest is the south wind;

and that which is nicest is love." Said the father, "Thou art correct; but I ask thee in God's name to tell me truly, who prompted thee." Said the youth, "As thou hast asked me by God, I tell thee, by God, it was thy daughter that told me, and here is her note."

The father went to his daughter in a rage, and said to her, "Since the day thou wast born till now, thou hast never set foot outside the house-door. Who is it that comes to thee? If thou tellest me, all right; if not, I'll kill thee." Said the maid, "By God, I know none that enters to me but the negress there, and thou." Said the father, "How then this letter?" Said the maid. "I sent it." Said her father, "Well, how knowest thou that the horse is the strongest thing, the south wind the moistest, and love the nicest?" Said the maid, "Yes; all kinds of animals pass below my window, but only horses shake the house." Said her father, "Right, I'm answered; but the south wind, how didst thou know that?" Said she, "I'm ever looking at that mimosa, tree: in summer it withers, but in spring it gets green; so I know that the north wind scorches it by its dryness, while what gives it greenness in the spring, is the south wind. And as to love, four times have I seen my mother in child-birth; and so great is her pain that I always say to myself never again will she do such a thing, but I know not where I am before she is in the family way again. Hence I conclude that love,—there can be nothing like it." "Well," said her father, "had'st thou not answered me thus, I would have slain thee; but as thou hast answered, God has preserved thee."

The father sent for the youth, and married him to his daughter.

The youth took the girl to his own house.

After a few days he said to her, "I have a little money, about five hundred riyāls, with which I mean to trade. Now what trade shall I try?" Said his wife, "Trade in silk, and let your trading be in women's raiment, for that is easily disposed of." He said "No; I'll deal in nothing but arms." Said she, "Well; as you

please."

He went off to the market, to the owner of a store, who said, "What dost thou need?" He said "I want arms—if thou hast any." "I have," said the seller: "What amount dost thou require?" The youth said, "I want one or two rifles and one or two swords." "All right," said the seller/and brought him a rifle. The youth turned over the rifle and said, "How much, the rifle?" Said the seller, "Two hundred and fifty riyāls." "Right," said the youth; "and swords, hast thou any? Bring two." The shop-keeper brought two. The youth turned over the swords and asked, "How much?" Said the seller, "Two hundred and fifty." The youth tendered five hundred, and went to the arms-market, and went round with his rifle. Said one, "How much for the rifle?" "He answered, "Three hundred riyāls." Said the other, "All right; I will take the rifle from thee for

three hundred, but on condition that I may take it to pieces; if I find any join, or any defect in the striker, or any knot in the wood, I shall return it." Said the youth, "I agree; take it to pieces." The buyer went aside, took the rifle to pieces, and found a join in it. He returned it saying, "If thou gavest it to me for ten riyāls, I wouldn't take it." Then the youth continued his rounds with the swords. Said the buyers, "The one for fifty, and the other for forty." The youth then went to another market, and they offered him, for the first, forty, and for the second, thirty. He went back to the first market and asked fifty, and was offered forty; for this price he sold it. For the other he was now offered thirty. He sold it for thirty. The rifle he took to the first man and sold for ten.

He then returned home having only eighty of his five hundred riyāls. Said he to his wife, "My God! So and So, son of So and So, has played me a trick, the like of which never was." Said his wife, "What did he do to thee?" He told her. She said, "All right, just show him to me." He said, "I will; he passes here

daily on his way to the mosque."

The next day they waited, and the man passed. Said the youth, "There he is." Said his wife, "When he returns from the mosque, go to his shop and start talking about women. If he gives ear, tell him that thou hast a sister at home, and that if he wants her, thou wilt give her to him in marriage." The youth went and did so. Said the shop-keeper, "Wilt thou show her to me?" Said the youth, "I must ask: if I am advised to do so, I will show her to thee." Said the shop-keeper, "All right."

The youth returned to his wife and said, "He says he wants her, but on condition that he sees her." Said his wife, "Certainly; to-morrow call him, and bring him hither, and sit him in that place. When he is seated call the negress and tell her to bring water to drink, and when the girl is standing before him

I will come out too." Said the youth, "All right."

Next day he went to the shop-keeper and said, "Get up, I'll show thee the girl." He went with him to his house and acted as his wife had directed. Then said the shop-keeper, "All right, follow me to my shop." The youth went after him. The former then said, "Thy sister hath pleased me. Wilt thou give her to me? How much dost thou want from me?" Said the youth, "Three thousand riyāls." After more or less talking they closed at two thousand, and the youth promised that the marriage should take place on the third day.

On the third day the shop-keeper came to have the marriage performed. The  $Q\bar{n}z\bar{i}$  was called and he tied the knot. At evening the bridegroom visited the bride and found her other than the girl

he had first seen.

The next day he went to complain to the  $Q\bar{a}z\bar{z}$ . The  $Q\bar{a}z\bar{z}$  summoned him and asked, "What news?" The shop-keeper said, "It is nothing; only yesterday thou joinedst me to So and So, the daughter of So and So, but So and So has sent me a negress

instead, and now I want justice from him. Find out about him."

Said the Qāzī, "Certainly; come to-morrow at noon."

The Qāzī went to him who gave the girl, and said, "So and So has come and laid a complaint against thee." "For what?" said the youth. Said the Qāzī, "He says that thou marriedst him to thy sister and sent him in her stead a negress; now that's not right, nor is it the act of decent folks." Said the youth, " As for me I married him to my sister, and it was she herself whom I sent to him." Said the Qāzī, "Well; he says he wants from thee what the law requires" [i.e. here an oath]. Said the youth, "I am with him." Said the Qāzī, "Present thyself to-morrow at noon."

The two presented themselves next day at noon. The plaintiff stated, "I asked of So and So his sister in marriage, and he took from me two thousand riyals, and he tricked me and sent me a negress. Make him liable for all the loss I suffered for the wedding feast, etc." The defendant said, "Is this all thou hast to say or is there aught Said the other, "This is all." Said the youth, "All right; listen Oh Qāzī of the Muslims! So and So, son of So and So, asked of me in marriage, and stipulated that I should first show him the intended. I showed her. Since he has seen her, I say (that) God knows I am not liable for aught that he claims." The other retorted, "But I asked for thy sister, and thou hast not given to me her whom I saw." Said the youth, "She whom I showed thee, who brought thee water and gave thee to drink, is it she thou hast or another?" Said the shopkeeper, "The contract was concerning her who passed by, and not concerning her who brought the water." Said the youth, "I have no other but my wife, and this sister whom I gave thee yesterday." The Qāzī said, "Take an oath that she whom thou didst give in marriage is thy sister. 1 If thou refusest and dost not give the eath, I will hold thee responsible for what So and So has lost."

The youth departed,2 and took the oath. After he had taken the oath, he that had married the girl said to himself, "I have lost two thousand riyals, and I must not send my bride away for nothing. When he went to her he found her to be an hermaphrodite.3 He summoned his slave and commanded him to conduct her to her people's house, giving her the triple divorcement.

Some time after, the youth's wife, she that had played this. trick, asked her father to sell her the house in which she had been brought up. Her father refused to give her the house. sent for her father's slave and said to him, "Oh Mubārak! 1'll, tell you something but don't tell any one else." He said to her

3 The youth is not supposed to have known this; his wife concealed

the fact.

In the absence of evidence such an oath would, according to Muslim law, be accepted as final.

<sup>2</sup> A date some days ahead would be fixed for the oath to be taken, as this would give time for reflection. The youth, by a legal quibble, took the cath, meaning that the slave was his sister in religion.

<sup>\*</sup> Mubdrak, "Auspicious, is name often given to negro slaves.

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[N.S.]

"All right; say it, my mistress." She said, "And wilt thou do as I say?" He said, "I will." Then she said, "When thy master goes to sleep and puts his dagger on the shelf, do thou take it and throw it on the floor." He said, "All right." She said, "But thou must do this for three or four nights." "All right," said he.

The negro went off, and when it was night he waited till his master was asleep and then took the dagger from the shelf and placed it on the ground. In the morning, when the master arose, he found his dagger on the floor. "That's odd," said he; "my dagger—I put it on the shelf, and in the morning it is on the floor—or did I forget and not put it on the shelf?"

The next night the slave did as before, and the dagger was found in the morning on the floor. Said the master, "What is it that easts down the dagger? The house is haunted and no longer

fit for me-but I'll wait another night."

The third night the slave took the dagger and cast it inside of the house-door. In the morning the master couldn't find his dagger. He went to open the door and found it downstairs near the door.

The father vacated the house saying it was haunted, and that he could not pass another night in it. After a few days he sold the place to his daughter at a reduced price, and the girl took up her residence in her home—and when I left them, she and her husband were living happily together in the house.

## I حكاية السايح

كان رجل سايم يقنقل من بالان الى بالان ذاك النهار جا الى بالان دخل المسجد راته حرمة وبيت الحرمة قريب المسجد صدّرت و الجارية قالت لها روحي اسالي الإنسان هذا ايش حسبة و ايش نسبة و هو من و من اين جا واحت الجارية حصّلةه قاعد في المسجد قالت له "حبابقي وصّنفا و تقول من انت و ايش حسبك و إيش نسبك و من اين جيت قال والله انا رجل سايم و اما النسب فشيخ و راحت الجارية و قالت لحبابتها قالت للجارية ردي و قولي له با اصدر لك عشا راحت الجارية و قالت له ان حبابقي تقول با اصدر لك عشا قال لها طيب خذت و الحرمة الما و في الليل صدرت له قرصة خبر و اربعه معاظيف 7 ومالاً الصحفة مرق و صدّرت الجارية به و قالت للجارية اذا اعطيقه الأكل قولي له حبابقي تقول الشهر مدير و و البحو مستدير و الكواكب اربعة وملت الجارية عرفي الطريق سرقت نصف القرص و معظاف و نصف المرق شربة م الحرمة راحت بالباقي عطته ايالا و قالت له تقول لك حبابتي و نصف المرق شربة مستدير و الكواكب اربعة قال لها طيب افكر النا في عشالا الشهر مدير و البحر مستدير و الكواكب اربعة قال لها طيب افكر النا في عشالا الشهر مدير و البحر مستدير و الكواكب اربعة قال لها طيب افكر النا في عشالا حصّل نصف القرص و مغطاف المرق شربة مستدير و الكواكب اربعة قال لها طيب افكر النا في عشالا عليب افكر الناقي عشالا نصف القرص و ثلاثة مغاظيف و نصف المرق قال للجارية قولي لحبابة مستدير و الكواكب اربعة قال لها طيب افكر الناقي عشالا دصف القرص و ثلاثة مغاظيف و نصف المرق قال للجارية قولي لحبابة مستدير و الكواكب و نصف المرق قال للجارية قولي لحبابة مستدير و نصف المرق قال للعاري لحبابة مستدير و نصف المرق قال للعاري لحبابة مولي لحبابة مستدير و نصف المرق قال للعارية قول للعارية قول لعبابة موليد و نصف المرق قال للعارية قول لعبابة مستدير و نصف المرق قال للعارية قول لعبابة مولي لحبابة مستدير و نصف المرق و نصف المرق قال للعارية قول للعارية موليد و نصف المرق و

<sup>1</sup> بلا colloq. for بلد ' town': pl. and sing.

<sup>&</sup>quot; to send." صدر 2

<sup>&#</sup>x27;to send,' not 'to enjoin.'

a title specially applied to the descendants of Abū Bakr; also, to learned men.

ه الما ع : app. a contraction of الما ن to' and الما ع الما

مغطنی pl. of مغطنی, 'Fat, lights, tripe, صفای, a piece of each

the fill of." ملاء

<sup>&#</sup>x27;round.' مُدور for مُدير 9

to encircle; also, "to be round or full (moon).

<sup>&#</sup>x27;to look attentively.'

<sup>&</sup>quot;thy (fem.)."

الشهر المكسوف و البحر منشوف و الكواكب ثلثة ردى الجارية و قالت للحبابقها انه يقول الشهر مكسوف و البحر منشوف و الكواكب ثلثه قالت للجارية سرقت عشا الغريب قالت الجارية لا قالت كيف ؟ صدرت اربعة معاظيف و يقول ثلثه وصدرت قرص خبر و الصحفة ملانة و كل شي بلغ نص من ذلك قامت للجارية و ضربتها و وحد انا وهي تضرب علجارية \*

# II حكاية التركي الجاهل

كانوا الترات في مكة حدوا ثلاث سنين , على غلاق الثلاث جا عوضيهم لا وجوا 5 ناس جدد لا يعرفون طوقها ولا اسواقها رروهم الناس , ذاك اليوم خرج واحد من الترك يبغى يجيب لحم وخضرة من سوق اللحم جا الى سوق اللحم وخذ له الذي بغالا تم شال اللحم بيدلا وصل في الطريق جاءت حدالا وشلت اللحم علية , ادلى 6 التركي على الفرد 7 و لقي ديك قبله وضرب الديك جا واحد جازع طريق قال له ايش سوى بك الديك يا أفندي قال و الله اخولا شلك لحمي قال له الرجل الحدالا شلت لحمك و تضرب الديك قال له كلها طير هذاك طير و هذا طير قتل الديك التركي ورد اخذ له لحم و طبخ له ضحاء و تضحى - و رحت من عندلا و هو يتضحى ولا عزم على \*

# III حكاية إالول و ابوه

كأن واحد رجل تزوج وجاة ولد بعد ما ولد الولد ماتت الحرمة تم يكالف الزقر 8 لبو الما وصل عمرة ثمان سنين و هو قليسل المال ذاك اليوم عندة ربع ريال تم يتكلم مع الولد يقول له معنا ربع ريال بالوخذ 10 به دجلجه واذا اخذنا دجلجة با تجيب بيض و با نظرحهن تحتها با تحفش 11 عليهن و إذا

I "The moon."

at the end of.'

<sup>.</sup> جارًا for اجوا ة

<sup>&</sup>quot; pistol." فرد ٦

<sup>&#</sup>x27;the father.' الأب = لبر و

<sup>&</sup>lt;sup>2</sup> Lit. 'absorbed, sucked up'

<sup>.</sup> هوض incorrect form of هوضي 4

stretched the hand to, took."

<sup>.</sup> young one ' صغير = زقر 8

ناخهٔ for لوځه 10

to sit upon, hatch (eggs)."

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كبروا العيال أبا لبيعهم هم واصهم بريالين و الريالين با لوخذ بهم شاة <sup>8</sup> والشاة با تلقي اذا جابت صيب <sup>8</sup> با نخلية لما يكبر و با نبيعة هو و اصة و با ناخذ بقيمتهم حاصلة <sup>4</sup> والحاصلة با تلقي والا <sup>5</sup> جابت الصيب بفخلية الما يكبر و با نبيعة هو و اصة قال له الولد لا اذا كبر انا با اركب علية قام لابوة وضوب الولد بكف علمحلي <sup>5</sup> واصعه فية حلقة خشعت العظم الحلقة صات الولد صاح جواله اصحاب السلطان <sup>8</sup> و شلود قال له السلطان يوم الفلاني احضر الى بيت القضاء حضر في اليوم المعلوم حكمت علية المحكمة بقطع الواس و ندروا به <sup>9</sup> و دفنود و ما المحضوت الما هذا و الله اعلم \*

# IV حكاية الربيح ١٥ والذي رباه

كان واحد راح الى البرية 11 حصل ربع صغير قبض الربع وضوى 12 بع الى البلد و علم الربع كل شي و عندة دكان ذاك اليوم طوح الربع في المكان جوا فلس يبغون حوايع من الدكان حصلوا الربع راحوا حصلوا راعي المدكان قالوا له يا فالمن جينا 18 نبغى حوايع من الدكان ولا حصلناك قال لهم ما حصلتوا الربع قالوا بلى اما الربع قاعد قال الذي تبغوة با يعطيكم اياة خذوا الما اليوم الثاني جوا اعطاهم الذي بغوة و راحوا , اتفق واحد بمولى الربع قال له يا فلان انت طارح ربع في دكانك من جا الى الدكان با يشل ذي يبغاه ولا با يمنع حد الربع قال له علمته وياك اروح اسرق الربع قال له علمته وياك اروح اسرق الربع قال له طيب وقع الخطر الواح واح الى عند الربع قعد في الدكان و سبر يلامب قال له عليه الدكان و سبر يلامب

ا عيال ' young ; offspring': prop. of human beings.

the young of any animal." ميت 'the young of any animal."

a jackass': Baghdad dial., dubo. 6 14 for lot.

<sup>&</sup>quot;the bone behind the ear."

ر to make a dent or depression; to press down.'

s while ' the chief authority in a town.'

you with ب 'to take out.'

<sup>&#</sup>x27;monkey; ape.' قرد = ربي 10

the country, as opposed to the town.'

to go; especially in the evening.'

<sup>13</sup> here, 'we went.' here, 'we went.' a bet, wager.'

الربع صفق بيدة و قال للربع سو هكذا الربع صوى مثله قال له اطوح يدينك على وكبك طرحها قال له الَّقي بدينك على عيونك سوى الربع سرق على الربع الرطل و القلم والدوالا و خباهم في كيسة و راح قال لمولى الدكان حدة وهات الشرط عطاة الشرط راح للربح و ضويه - من بعد شهــرين اتفقوا قال الذي سرق. الربع بغيتنا اروح اسرق شي على الربع قال ما عاد با يسترق لك قال له و ان سرقت قال له الشرط الأول مردوف 1 قال له طيب راح الى عند الربع قعدد. في الدكان - سوى للربيمثل الأول و الربيع يسوي مثله الما حط يدينه على عيونه. رد الربع و فرز 2 عيونه بيدينه قال له مو هو كذا لق 3 يدينك على عيونك فرزهن ازيد - شاف الربح ما فيه طب 4 راح الى عند مولى الربع قال له ذي. الشرط ما استرق لي الربع قال له كيف سويت انت و ايالا قال سويت مثل الأول الما وصلنا عند عماض العيون فرز عيونه بيدينه قال له قد قلت لك ما با يسترق. لك قلت لي لا با يسترق من بعد قال له طيب اما ذا الشرط الأولي الذي شليته علي و إما ذا ما يحل لي حقك ورد له الزايد و ذاك سار الى بيته وراعي الدكان سار الى دكانه . و رحت من عندهم و الربع قاءد في الدكان وخذت منه بخمسية ٥ جزر ولا اعظيةه الخمسية جيت با اردح صاح علي الربع وطمر علي. و قبض في ثيابي قال مولى الربع ايش عندك ايش سويت مع الربع قلت لد ولا شي و اعطيته الخمسية فكنا ورحت و إلما هنا و السائم خاص و عام \*

# V منافع الادب

كان رجل تروج وجاء ولد كبر الولد ولا علمه في شي من العلوم وصار الولد يا هو يا ثور 6 مان لبو 7 تزوج الولد زاد الولد ولد كبر 8 الولد علمه جميع العلوم و صار الولد لا يوحل 9 في سوال ولا جواب - صن بعد راح ذاك اليوم الى.

<sup>.</sup> doubled ، صردوف ١

<sup>&#</sup>x27;to open wide.'

to place, put.'

the taking one in."

<sup>5</sup> des 'a small coin.'

<sup>&</sup>quot;is to be stupid, "To be 'O stupid one!' "is to be stupid, .i.e., 'to be such that people call one, 'You stupid.'

<sup>.</sup> گَبو for كَبُر 8 م م م م م الله و 1 الله و 1 البو 1

<sup>9</sup> يُوحُل lit. ' to be stuck in the mud.'

عند الدولة 1 شافه الدوله تكلم معه عجبه كلام الولد ساله الدولة حد لك حد الجول معك قال لا ما عندي الا ابوي قال له طيب طرب من ابوات با القي لكم مشاهرة ابغاى تقعد عندي قال له طيب راح جاب ابوة شاف ابوة الدولة كلما ساله في كلام ما جووب عليه قال الدولة نعم الولد بيس الاب قال الولد نعم الولد و نعم الاب و بيس الجد قال له ليش بيس الجد قال له نعم ابوي علمنا جميع العلوم وجدي هو ما علم ابوي قال له و الله صحيح كلامك الان شف بيت الفلاني هذا لك عطية و كذا كذا ريال مصروف و مجيك و مراحك يكون عندي تحضر في كل وقت - و سرت انا من عندهم و الولد هو و ابود في سبعة عشر نعمة من بعد ما كانوا فقوا و الله اعلم \*

### VI حكاية الخطيب

كان واحد خطيب في مسجد ولد في كل جمعة خطبة جديدة يصنفها سن راسه الحد الما ذاك اليوم قالت لد زوجته ما هو الت الذي تخطب ولا تصنف اخطب انا واصنف الآ انا قال لها الخطبة انا اخطب والتصنيف اصنف الآ انا ولا حد كماي في كل جمعة با اصنف عطبة جديدة قالت له الحرمة طيب عدد ولا حد كماي في كل جمعة با اصنف على دواته و البياض يبغى يصنف الخطبة قالت الحرمة انا باكيدة الذي هو لا يقول انا اخطب و اصنف لو كان مفتكر باشغال البيت إن كان ما و يصنف في كل جمعة خطبة جديدة و سبريكتب باشغال البيت إن كان ما و يصنف في كل جمعة خطبة جديدة و سبريكتب ما شي و حطب عات الحرمة وقالت له البرما شي و و السبن ما شي و بصل ما شي و حطب ما شي و حومر ما شي هي تعدد و هو يكتب حسب ما تتكلم الحرمة فك آ القلم و الدواة و راح الى السوق و جاب لها الحرايج اخذ الما اليوم الثاني يوم الجمعة قالت له ثياب ما عندك ثياب و بقروح الى المسجد بغير ثياب راح الى السوق و راخذ له ثياب ومو حاسب انه قد صنف الخطبة ود من السوق ضربالحدى عشو و اخذ له ثياب وهو حاسب انه قد صنف الخطبة ود من السوق ضربالحدى عشو

the Governor.'

ة **ذُذُ** for ذُكُا.

<sup>.</sup> لما كان=إن كان ما ة

for جاوب 'to give an answer.'

<sup>&#</sup>x27;as he (says).'

<sup>&#</sup>x27;there is none.' لا شي دما شي ه

<sup>&#</sup>x27;he put'by,' not with violence.

وحصل ضعالا حاصل 1 تضعى و ادلى على كتابة وصل الى المسجد حصل الناس منتظوينة دخل وطلع المنبر افكر في الكتاب حصلة مكتوب بر ما شي وسمن ما شي حطب ما شي وحومر ما شي و بصل ما شي نزل من علمنبر وقال لواحد شل واحدة من الخطب الدويلة و اخطب بعيث انا ما اقدر قال له طيب قام الرجل هذا وشل خطبة و خطب بالناس وصلى بهم خذ الما بعد الصلاة وراح الى بيته وقال للحرمة و الله انت التي تخطبين و انت التي تصنفين و ذي الحين ذا المفاتيع وقد ما قبا تلقيقه في البيت لقيد و خلينا افتقه للمسجد و للجمعة م اخذت المفاتيع منه قالت له ما انت قلت و خلينا افتقه للمسجد و للجمعة م اخذت المفاتيع منه قالت له ما انت قلت النا الذي اخطب و امنف قلت لي الا وذا الحين كلام من في السوا و من في الخطاء و سوت من عندهم و هم في مراجلة \*

## VII طبيب العرب

كان هندي من إهل حيدراباد سقط من راس خيل وفك دومة الورك و ودرج 5 على الاطبا و لا حد جاب شي فيه - حد من العرب شار 6 عليه قال له سافر الى العرب و با يداوونك قال له طيب عطالا كتاب الى عند رجل في الشحر راح وصل الى الشحر عطا الرجل الكتاب قال له فيه بدو هنا بالبرية و يجون الى هنا يسمون الحموم و هم مشهورين بالطب - صدر عاني 7 إلى السوق حد من البدو قال له فيه - طرب على واحد روالا الهندي قال له البدوي كم سنة لك من ني 8 سقطت قال له اربع سنين قال له ما با يداويك الا فلان و فلان بالبرية و في ثلاثة ايام با يجي قال له طيب با انتظر له - خذوا الما اليوم الثالث جا هذا الذي شل اسمه ورووة الهندي قال له اداويك لكن لازم تندر سعي الى البرية قال له طيب اندر معك الهندي قال له خذ لك دور و بريالين وزيف 9 و بريال قصب دخن و اليوم الثاني

ا بالمال 'ready.'

<sup>\*</sup> whatever. مهدا = قد ما

<sup>&#</sup>x27;to go from one to one.'

nessenger.' عانی ۲ مانی

<sup>·</sup> old ، القديمة = الدويلة 2

<sup>&#</sup>x27;the hip-joint' دومة الورك 4

اشار for شار ه

<sup>.</sup>منذ≟من ذي ه

<sup>9</sup> وزيف 'dry, salted fish.'

نروم - إشترى الحوايم الهندي وخرج الى البرية في قدا 1 البدوى وصلوا ألى الصرم 2 قال له البدوي ثلاثه ايام الثور لا تسقيه الما واكله الوزيف والقصب قال له طيب فعل حسب ما قال له - يوم الرابع جا البدوي شاف الدور الجنب بالثاني لشع 3 قال قربوا لي الهذهي والذي ملا سفيع 4 ماء اركب الهذهي علثور و ربط رجوله ذم بذه فك الثور علماء سبر الثور يشرب قوست بطونه واجترت رجول الهذدي صلح الهذدي فكوني فكوني قال له اصبر ولا فكه الما 5 فقعت 6 الرجل - ردت دومة الورك في مثبتها - فك رجوله و اندروا الهندي من علثور بالبصر 7 والقور على قعادة 8 و خلور اربعين يوم و اكله لحم كباش و ذرة من غير ملح صح الهذدي سافر من العرب الى الهذد واكرم ألعربي بكرمة كبيرة وجا الى حيدراباد ولا عاد دريت ايش صار مذه الذي لم اتفق به - والسلام \*

## VIII حكاية الفقير

كان واحد فقير دايم وهو و في الخلاء ويدور من شعب 10 الى شعب ذاك. اليوم رام الى شعب وضيع الطريق و تهيم الله في ميادين وخذ ثلاثه ايام لا اكل ولا شرب يوم الرابع وصل الى ميدان وشاف في الميدان بيت وقال و الله هذا البيت با احصل لى فيه الماء والاكل توجه الى البيت و صل و البيت له اربعة ابواب و كان هذا البيت ليهودي جا با يدخل من باب منعة راعي الشركي 12 قال له ما الخليك تدخل الا أن با تقتل الولد ذا قال اعوذ بالله من قتل النفس واح للباب الثاني حصل على الباب واحد قيم 18 يحرس بنت عموما في خمسة عشر سنة جا با يدخل منعه قال له ما لك حكم 14 الا تجامع البنت و تدخل قال اعوذ بالله من الفاحشة راح للباب الثالث حصل واحد علباب و عنده خور جا با يدخل من الباب منعه قال له ما لك حكم الا تشرب كاين من الخمو

' valley ' شعب ا

in the company of.'

to stick to.' ألشع 3 " لشع

<sup>.</sup> حثى = الما 5

<sup>&#</sup>x27;carefully.' بالبصر 1

<sup>&#</sup>x27;who was always.' دایم و هو و

<sup>!</sup> lost his way, wandered نهيم

the sentry; the keeper of the watch.

قائم for قيم 18

order, or permission. حكم 14 'order

<sup>2</sup> مرم 'Arab encampment.'

<sup>&#</sup>x27;a large basin.'

<sup>6</sup> to crack.

a couch, bedstead.'

و تدخل قال له و ذلا أ مصيبة رام الى الباب الرابع حصل علباب رجل وعنده لحم خنزير جا بايدخل منعه ليش قال له خد لك من اللحم الذي تريد وبعد الدخل قال ايش ذي المصيبة اليوم جيت فيها. راح و قعد تحت شجرة وتم يفكر ايات 2 اسمل من الاربعة هذه استخذ 3 في عقله الخمر اسمل راح الى عند مولى الخبر قال له هاك الكاس عطاة شربه بعد ما شربه دخل حصل العيش و الما كل من العيش وشرب له ماء من بعد رد يتفرج علبيت جا الى الباب الذي عليه الوله و قال للذي يحرس ايش هذا الوله قال هذا لمن بيقتله قال له انا الذي با اقتله و كان الخمر قزقز 5 في رأسه قبض برقبة الزقر 6 وقصفها 7 تبتي الزقر , رام الى الباب الذي عليه البنت سال الذي على الباب ايش هذه البنت قال له لمن با يجامعها قال له انا با اجامعها قال له رم دخل الفقير علبنت 8 و جامعها , من بعد رام الى الباب الثالث الذي فيد الخمر و خذ له ثاني كاس ورام الي الباب الذي عليه لحم الخذرير سال مولى الباب قال له ايش هذا اللحم الطيب عندى للبيع قال له هذا لبن با ياكل منه قال له رخصة أكل قال له رخصة , كل من اللحم الما ملا بطنه , من بعد آذى اهل البيت طودولا من البيت راح تهيم في الخالم خذ الما اليوم الثاني رد عليه حسم جاء الما بلد وهو متندم على افعاله جاء الى المسجد حصل المؤذن قال له ها من اين يا فلان قال له و الله من ارض الله 9 جرت في قصة ما بعد جرت في احد قال له اخبارك ايش من قصة جرت فيك احكى له بالأمر من اوله الى آخرة قال له يا قليل العقل لوكان جامعت البنت والا ققلت النفس ان كان ما 10 ضميت الأربعة كلها و من يوم شربت الخمو ادر ١١ انك با تضم الاربعة كلها. قال له استغفر ربك وانو لعاد تعود لمثلها والله غفور رحيم - وراح الفقير ولا عاد دريت الى اى خلاء لقف 12 \*

<sup>&#</sup>x27;this, too, is nothing but.' و[ما]ذي الا prob. الله prob. الله وفلا

ایة or ای or آیات 2.

اخذ = استخد 8

<sup>&#</sup>x27;to buzz.' قزقز food,' not 'bread.' قزقز 5

<sup>6</sup> نقر ' the young one,' prob. connected with

<sup>&#</sup>x27;to break' قصف ٦

<sup>.</sup> على البنت for علبنت 8

<sup>•</sup> the world'; as all land belongs to God.

ان کان ما ا II Imper. apparently for the past tense he went. و فف 12

### IX حكاية اهل الكذب

يوم من الايام اجتمعوا اربعة انفار من العرب للسمر قال واحد من الاربعة اقول لكم بكلام و من قصو هو القاصر قالوا له تكلم قال بنجيب من كذبة. و بانشوف كذبة من اكبر قالوا له استبدي من عندى قال لهم طيب و هو شاعر قال في شعوة : " يا وحلتي 1 يوم اني للكذب ما نا بصير , الحقت واحد على واحد حجم له بر ير 2, مسكين ذي قد بحث بابرة ثلثين بير قال له واحد اما انت شاعر واحذا ما حد شاعر فينا ان تبغانا لجاوب عليك بغير شعر بلجووب عليك. قال لهم جووبوا من غير شعر ان حد با يقدد قال واحد - كان عندى سبع بل 3 و فيهن بعير هيير و القيت البعير اول القطار و شفيت 4 في عقبه اخطم البل وصلت راس العقبة امتديت في الجول 5 فكيت البل وسرت لقضا الحاجة سبر البعير يهدر وجا صقرو قبض بلهاة البعير وشل البل كلما وغيب بهن في الجو و لا عاد دريت في اين رام بهن وفاتن - قال له الثالث فلقت 6 كلامك قال له. نعم قال الثالث : كنت عند با دهري و عبر على با دهري الخوف 1 النوب ما حصل مجنى 8 اجتمع النوب كله و راح الى وادي حول و حط على علب النوب و نقر 9 العلب وشل العلب في الجووجابة الى تحست شرج 10 با دهري، غرز 11 العلب وصار النوب يجني 12 من العلب وهاذك السنة القي عسل ما بعد القى مثله و حضرت الدبس 13 و اعطانا با دهري رفعه 14 عسل - قال الرابع مطلعت حرمة من وادي حول الى راس الشعب و لفت نقله حطب بعد ما حزمت النقلة راحت تشرب علقلت 15 جاءت سحابة و دخلت في النقلة ولا-عندها خبر راحت بالحطب وصلت الى تحت البيت طلعت بالحطب الى ريم 16 البيت خذوا الما في الليل الا و برق البارق و رعد الرعد سالوا الناس قالوا

embarrassment; as though sticking in the mud.'

large jar.' ويو 2

اب**ل** for بل

<sup>4</sup> نش 'to pursue one's way.'

open place on top of mountains.' جول

هُ الله ' Have you closed, finished ?'

<sup>&</sup>quot; antumn.' ه خريف = خرف ' what is gathered.'

<sup>&#</sup>x27;to uproot.' أهر و a village.'

<sup>&#</sup>x27;to gather honey ، جنى 'to plant, fix in the ground.' أفرز

<sup>&#</sup>x27;a measure of 11 lb.'

<sup>&#</sup>x27;roof.' ويم a cavity in a mountain, where water stagnates.' الله 'a cavity in a mountain, where water stagnates.'

فين هذا الرحد قالوا في بيت فلان سالوق ايش الخبر قال والله الحرمة سرحت او جابت نقله حظب وضوت السحابة فيها ولا مندنا خبر ولا درينا الا بالرعد و البرق فوقنا , راءي البيت بند ابوابة و خرج السيل من الرقاد وشرب وادي حول هاذك الليلة وزأن المجم وسبب هذا نوب با دهري زان جا حصل العلب عروقه طافه و شلسة النوب , و انا سبرت من عندهم و كلاً يقول انا الكذاب الكبير \*

## X حكاية الرجل و حرمته - حيلة شرعية

كان واحد تزوج بعد ما تزوج شلت العرمة بحمل 5 حلف في العرمة 6 ان جانا ولد نذبج فدو 7 و يكون كبش ذيلته 8 سبعة اشبار خذ الى ذاك اليوم زادة وله راح يبغى كبش ذيلته سبعة اشبار ما رجد شي رد الى البيت حصل عمه قدية 9 في البيت شافه عمه وجهة مقلوب قال له عمه وراك 10 يا فلان في ذا العالم قال و الله بنتك طلقت من عقدي قال له لايش قال له حلفت فيها أن جانا ولد نقدي بكبش ذيلته سبعة اشبار ولا حصلت شي سمعت العرمة المخاطبة ما بين زوجها و ابوها قالت دوله شبر بشبر المولود و احذر عليها تعود، راحوا جابوا كبش ذيلته كبيرة شبروا بشبر الولد و جات سبعة اشبار و زايد و ذبعوا الكبش و الذاني قسمته على الذابي \*

# XI حكاية الثيران المعممة

كان واحد قاضي عندة اثنين اولاد اما واحد من الاولاد ذكي يلقف الكلية. وهي فارة واما الثاني لاهو كذا ولا كذا , ذاك اليوم جمع الاولاد قال لهذا الذي .

<sup>&#</sup>x27;to go in the morning.' فرى 'to return, come back.'

ه و steps,' درجه 'a flight of steps.'

<sup>4</sup> وان ' to be, or become, in good condition.'

ohild in the womb.

<sup>&#</sup>x27;a sacrifice.' فدو 7 فدو 7 حلف بالطلاق = حلف في الحرمة 6

ه و الله عنون الله ع

<sup>10</sup> رواک 'What news?' What is the matter?'

opening, window.'

<sup>.</sup> قربية for قرباة 2

<sup>3 )</sup> asso 'a large basket for carrying earth.'

one whose profession is war, i.e., all the members of a tribe except artisans and cultivators. 'Ulamā, also called Sheikhs, are included in the Qabīlī.

<sup>.</sup> هولاء عاذولا 6 reception room, court.' معضرة

<sup>&#</sup>x27;bone near the thumb.' بوع 'wrist bone near the toe.'

<sup>8</sup> i.e., his mother's darling, and not that he resembles his mother or takes after her.

### XII حكاية العين و الدبا

كان واحد معه عبد و العبد زومه 1 و معه شجرة حق دّبا قو كان يختلف عليها فرعان عليها من السرقة لأن فيها قعازيز قذاك اليوم قاعد عندها جا رجل جازع طريق سلم علعبد اول و ثاني ما قبل السلام ذاك راح توا الى عند السيد قال له يا فلان اليوم عبرت علعبد و هو قاعد و سلمت عليه و لا رد السلام و لا انا داري ايش بحال العبد و ذا الحين خذ خبر العبد لا عاد يقتلنا و الا يضربنا لانه عبد زومه قال له ليش بينك شي انت ويالا قال له لا قال له الحسن ، خذ الى الليل ضوى 4 العبد ساله سيدلا قال له فلان عبر عليك وسلم عليك و لا قبلت السلام ايش بينك انت ويالا قال له يا سيد ما بيننا شي احنه ويالا قال له ملا 5 ليش ما قبلت السلام والكلام والكلام

## XIII حكاية الول الذكي

كان رجل تحقه 6 وله و الوله ذكي ذاك اليوم قال لوله اليوم بنروح عند الشيخ قال له طيب تضحوا وضحاهم رز سقطت حبتين في لحية الشيبة 7 و لا دري بها راحوا الى عند الشيخ وصلوا المحضوة حصلوا الناس قعود افكر الوله شاف حبوب الرز في لحية ابوة قال له يا به ظبي في البسنان قال له عبرنا عليه الخمسة الفرسان 8 و عبريدة على لحيقة و اذا واحد هو و ولاه قعود من بعد راحوا الناس قال لوله سمعت قلان اللى قال لابوة شف غدوة با اسوي شي في لحيتي و اذا كنا قعود حسب ما قال فلان لابوة قل لي خلي الناس يقولون وله فلان رجال قال له احسن خذوا الما اليوم الثاني حضروا وطرح حبتين رز في لحيته بعد ما اجتمعوا الناس قال الوله لابوة يا به ذي وطرح حبتين رز في لحيته بعد ما اجتمعوا الناس قال الوله لابوة يا به ذي

a stupid fellow; a dolt.' 2 مُنجِرة حق دبا a pumpkin-vine.

pl. of قعازير of the fruit of the pumpkin plant; also applied to melons.'

<sup>\*</sup>why then. وَإِنَّ ا = عَلَا ؟ 'to return in the evening.'

<sup>8</sup> disi\_sie. 7 din 'grey-beard; the old man.'

<sup>8</sup> فارس means loc. 'anyone who is expert in any subject.'

## XIV حكاية الحضرمي واليمانيه

كان واحد حضرمي بارض حضرموت فلات الا تعدة و لا فوقه توجّه الي اليمن اجا الى صَنْعا وفي صنعا باشا ملقى اللائة انفر يضحكونه يجيبون له من السوقات8 جا الحضرمي الى صنعا جا الى عند الباشا حال ما شافع الباشا قال له منين يا ولد ؟ قال له والله من ارض حضرموت قال له حضرمي ؟ قال له نعم وكان يتكلم معه عجب الباشا كلامه من ذكاته لانه ذكى احده عنديد ورقع 4 الثلاثة اليمانية ولا عان خلاهم يدخلون عنده اتفقوا الثلاثة وقالوا كيف الخبر في الحضرمي 6 ؟ جاء من حضوموت وقطع معاشفًا من عند الباشا قالوا بغيدًا له معجزة 6 الذي تخرجه من عند الباشا قالوا و ما المعجزة قال واحد المعجزة عندي إذا اجيب له بيتين آخر البيت ما فيه حرف قالوا هات البيوت 7 بانسمعها جاب البيوت قالوا يا الله بغينا 8 عند الباشا ساروا الي عند الباشا قال لهم الباشا ايش جابكم قالوا جينا للحضرمي هذا بنجيب له بيتين إن جوب عليها فاحفا حسب ما دقعنا الباشا قد كلًا في مكانه و إلا جوب عليها فالحضومي يخرج واحذا نود على حسب ماكنا عليه قال لهم طيب الباشا بااشاور الحضومي قال الحضرمي لعاد 9 تشاو رني اجوب عليهم قال لهم طيب الباشا غدوة وقت الظهر احضروا وانا با انبي ١٥ من الناس يحضرون ليسمعون بيوتكم وصدّر ١١ الباشا الاهلّ صنعا اخذو الما اليوم الثاني وحضروا الناس و الحضرمي قاعد عند الباشا خذوا بعد ما القفرا

<sup>1</sup> Destitute, from to escape,' as though he has escaped everything.

one that has found, acquired.'

العرقات 3 'laughable stories.'

دنع ' to turn out, drive away.'

<sup>&#</sup>x27;a man of Hadhramaut.'

ه معجزةٌ و 'puzzler, something to baffle,' and apparently not a miracle. In Baghdad dialect يريد له معجزة حتى يخرج 'a miracle is required for him to go away.'

ابیات pl. of بیت 'a line of verse.' Should be بیوت آ

<sup>8</sup> نغين we will now go; lit. "we want."

و العاد تشاررني و there is no need to consult me, عاد عاد تشاررني و is a verb.

<sup>&#</sup>x27;news، نبأ 'I will inform' نبأ 'news.

<sup>&#</sup>x27;sent word.'

Vol. II, No. 9.] Some Arab Folk Tales from Hazramaut.
[N.S.]

النام جوا اليمانية قال لهم الباشا ها وين جيتو 1 بتجيبون بيوتكم او عادكم 2 قالوا لا لا بانجيب بيوتنا قال لهم يا الله هاتوا دخل الذي با يجيب البيوت الى عند الباشا وقال .

مورت بعطار يبيع بعطرة \* و مسك وكافور فقلت له [ هذا يشم القائل] فقال لي العطار ردوا بضاعتي \* ومسكي وكافوري فقلت له [ هذا ينخسر] قام الحضرمي وقال اسمعوا با من حضر سمعتو بيوت اليماني واسمعوا الجواب \*

مررت بخباز يبيع بخبود \* ودجر 8 وفقوس 4 فقلت له \_ (هذا يبلع القائل) فقال لي العجباز ردوا خميرتي ، ودجري وفقوسي فقلت له \_ ( هف يقع ) قام اليماني يسبّ العضومي يلعن بلدك ويلعن ارض ربتك يا ترس يا ابن الترس قال الحضرمي لا تسبّنا سبّ الباشا الذي طردك من عده وبعد مدة من الزمان الحضرمي اخذ رخصة من الباشا وتوجة الى مكة وصل الما عرض الطريق النقرة الحرامية وشلوا 5 كل ما كان معه وراح الى مكة ولا تحته ولا فوقه وصل الى مكة ولا احد عطاة شي ياكل وقال في نفسه اسوّي حيله الذي تخرج اكلي قام الحضرمي عنده مسب ولفلف الضفع الى ما ملا المسب بعقه وعصده ورام يدور في السوق عسالا يقمر احد و اذا واحد كذلك مصرى لا تحته ولا فوقه ما له عشا والمصرى عندة مسب واجا على قلبه اسوي حيله واقمر احد قام للمسب الذي معه وعالاه رماد واندر في السوق الثاني يدرج اتفق هو والحضومي قال له الحضومي ايش عندى يا مصري قال له والله 6 عندى طحين للبيع اذا تبغالا وانتا ايش عندى يا حضرمي قال له انا عندى تمر قال له ايش تشوف يوم تنطيفا التمر وانطيك الطحين قالله طيب الحضرمي اخذ مسب المصري والمصرى خذ مسب الحضرمي وكلا راح الى موضعه فكعصب المسب الحضرمي يبغي يعجن الطحين ويلقيه له خبر حصل في المسب رماه افتك يسب في المصرى والمصري وصل الى موضعة فك مسب الحضرمي قال 7

ا وين جيتر lit. ' up to where have you come or reached,' i.e., how have you progressed (in your plan).

or, 'is anything still remaining (to be done).

<sup>&#</sup>x27;a kind of vegetable' فقوس 4 'beans' دجر 8

ه . شالوا carried away,' for شاوا

a meaningless oath, like the Irish 'Faith.'

in the sense of 'to move one's hand' is rare but classical.

Journal of the Asiatic Society of Bengal. [November, 1906. 434 يده في المسب يبغى ياكل من الدمر حصل له ضفع افداك يسب الحضرمي ومن امثال العرب اتفقوا سارق مصر وسارق حضوموت \*

### XV العبيد المتصيديون

ذاك اليوم اتفقوا اربعة من العبيد وقالوا بانسوح بانقنص في شعب القلائي سرحوا وصلوا اليل راس الشعب شافوا الصيد 1 شردوا مذه فزعوا قالوا هذه اساد ما هي صيد الصيد تقع ٤ صغيرة وراحوا الى ها بط ١ الشعب افترقوا اما واحد حصّل جرز وضوب 4 الجرز وصابه صاح على اخوانه جوا الى عندي شافوا الجرز قال واحد مذهم كيف لقيت 5 من عيونه قال المسلم الله قال له الثاني كيف سويت من رجوله قال المسلم الله قال الثالث كيف سويت من راهـ ه قال المسلم الله من بعد شاوا الجرذ راحوا به الى البلد و دخلوا في زامل 6-التقوهم الناس قالوا ايش مع الدو سويد 7 قالوا معنا وعل قالوا كيف بانشوقه شافور الناس لو ذلا 8 جوذ ضحكوا عليهم الناس قال واحد ايش معكم يا اسيادي تضحكون قال له واحد لنا اربع شهر ولا حد صاب رعل الا انقم اليوم يا ابوسو يد الدفي العبد - هذا ما كان من حكاية العبيد وقداصتهم \*

### XVI با داهيه الطبيب الحاذق

ذاك اليوم رجل بدوي شرب لبن حق راحلة واللبن فيه القراد لشع و في كبدة تم الرجل يستل 10 في حاله ذاك اليوم قال با اروح الي با داهيه رام وصل

applied in Hazramaut to the ibex and the deer, the only game الصيدة ا found in those parts.'

<sup>2</sup> مُقَعَ ' are found.'

<sup>8</sup> bila 'the bottom of.'

<sup>&#</sup>x27;what did you do.' مرب 4 'what did you do.' ضرب

the chant of victory of the hunters; also applied to marriage songs.

ألدو سو فيد Father of the little black one.' The pl. is ' بوسويد ٦

واذا هو = لوذلا ه

<sup>&#</sup>x27;to get thinner and thinner.'

الي عند با داهية نظره با داهية قال با داهية هاترا قطبة ا من كبد راحلة قالوا له طيب راحوا جابوا القطبة قام للقطبة وعصبها بغيظ قال للبدوي امغطها ق مغط المقطبة المريض و راس الغيط تم في يد با داهية وخلاها ربع ساعة في بطنة من بعد جرّ الغيط اندر القراد بالقطبة وتعافى المريض من مرضة سالوا با داهية الناهي قالواهاله ليش ما طلبت قطبة كبد شي ق من المواشي الثانية ف قال القراد القراد روح ربي الراحلة بفك المواشي الثانية و يوو ح لها استخذت في عقلي. ان ربي الراحلة با يغرّ ج القراد من بطنة - هذا ما كان من حكاية الطبيب وهي والله حكاية محيحة وقعت في قيدون بلدة الشيخ سعيد بن عيسى في وادي وعن في حضرموت \*

## XVII حكاية كين النساء

كان واحد في ربدة الدين 6 معة بنت حسينة النظر قال بنتي ما أزوجها الا على رجل يفتيني في ثلاث خصال ايش اقوى ما كان وايش ارطب ما كان وايش الن ما أعطيك البنت الا إن كنت وقيش الذ ما كان جا واحد يخطب البنت قال له ما أعطيك البنت الا إن كنت تفتينا في ثلاث خصال و ذكر له تلك الخصال ولك ثلاثة ايام مهلة إن أفتيتنا في الايام المحدودة أعطيك البنت جيت 7 بعد غلاق الوعدة 9 ما أعطيك البنت واح وعجز عن الثلاث المذكورة جا ثاني وخطب في 9 البنت قال له مثل الاواي 10 راته البنت واعجبها قالت للجارية روحي الى عند فلان وقولي له ايش قال له ابوي راحت الجارية إوملت الي عندة وقالت له حبابتي 11 تسلم عليك وتقول لك ايش قال لك إبوها قال للجارية سلمي على حبابتش وقولي لها انا خطبت فيها وقال لي ابوها إن افتيتنا في الثلاث ازوجك على البنت راحت خطبت فيها وقال لي ابوها إن افتيتنا في الثلاث ازوجك على البنت راحت الحارية الى عند حبابتها وقال إن افتيتنا

<sup>&#</sup>x27;a piece.'

<sup>2</sup> bec 'to swallow.'

<sup>&#</sup>x27; any.'

<sup>،</sup> other ، ثانیه ،

name of a tribe = Raidab, the city of the Din tribe.

<sup>&#</sup>x27;in case you come.'

s قلق الوعدة tit. ' the close of the time assigned.'

ن to ask in[marriage.

الأول = الأولى 10.

<sup>&#</sup>x27;my mistress.'

- في الثلاث الخصال ازوجك على البنت قالت له طيب ادلت 1 على القلم والدواة وكتبت الذي 2 اقوى ما كان الخيل وارطب ما كان العليا 3 والذ ما كان الجماء وارسلت الخط 4 الى عند الولد اقبض الخط خذ الى نهار الوعد و حضر قال له ها هليوم يوم الوءد تُفتينا قال له نعم قال له تكلم قال اقوى ما كان الخيل وارطب ما كان العليا والذ ما كان الجماع قال له سوا 5 كلامك لكن سالتك بالله أن تقول أي من الذي قال لك قال سالتنا بالله والله بنتك الذي قالت لي وهذا خطها رام الى عند البنت غضبان عليها قال لها ص يوم خلقت 6 وانت في البيت ما تندرين منه ومن الذي يدخل مندش ان تقولين لي والا اذبعش قالت له والله ما اعرف احد يدخل عندي الا الجارية هذه وانت قال لها ملا 7 ايش هذا الخط قالت له هذا إنا ارسلته الى عند فلان قال لها طيب بايش عرفت الخيل اقوى ما كان والعليا ارطب ما كان والجماع الذ ما كان قالت له نعم جميع الخيوانات تعبر تحتي ولا شي بحرى القصر 8 الا الخيل يوم تجزع 9 قال لها زين 13 فقوى والعليا بايش عرفت قالت له العليا اعرفها بالسمرة 10 هذه ذي مقابلة المكان اذا في ايام الصيف غبوت 11 لان الشمال تحرقها من حفتها 12 وفي ايام الربيع تخضر عرفت ان العليا رطبة لأن العليا ما تهب الا في ايام الربيع - و اما الجماع والدتي اربع مخاطر 13 تحدل 14 و تلد و التعب الذي تشوفه ا 15 كثير و الا قلت 16 اذا كان هذا النعب ما عاد بنعود على كماة 17 ولا ادري الا وقد بطنها ملانة 18 عرفت 19 انه من لذة الجماع أن ما شي كماة قال لها

ادلى على ' to take; stretch the hand to.' وألى على ' that which.'

the letter.' ق 'right' (adj.)، الخط ' he south wind.' العليا 3

ه خلقت و you have been created, born.

otherwise, in that case.'

<sup>8 &#</sup>x27;flat, or story of a house.'

<sup>9</sup> نوزة - المورة (to pass by.' المورة 10 a kind of tree."

becomes dusty, ash-coloured.' 12 غبرت 'berning.'

<sup>&#</sup>x27;to conceive, be pregnant' مخاطر 18 'times.'

<sup>&#</sup>x27;I thought: قلت 16 'I thought: قلت 16

<sup>&#</sup>x27;she will no longer do the like thing again.' ما فاد بتعود على كماة 17

is mase, in classical language ; fem. colloquially.

<sup>&#</sup>x27;then I knew.' عرفت 19

طيب لولا افتيتي لكان ذبحتش ويوم ا افتيتي الله سلّمش ووصي اللولاد و عقدله با لبنت شل البنترام بها الى بيته - هذ الما بعد كم يوم قال لها مندي من الفلوس قدر خمسمية ريال وبا القي لي بيع و شوا في ايش اسوي بيع و شرا قالت له الحرمة سو ٥ بيع و شرا في الحرير و يكون 4 في ابس النساء الأنه يشنل سمير 5 قال لها الا ما اسوى الا في الاسلحة قالت له طيب عرفك 6 راح الى السوق جا الى عند مولى الدكان قال له ايش تبغى قال له بغيت اسلحة ان كان في عندك قال له عندي كم تبغى قال له بغيت بندق و الا بندقين و سيف و الا سيفين قال له طيب جاب له راعي الدكان بندق قلب البندق قال له بكم البندق قال له بميتين و نص قل له طيب سيوف عندى شي هات ثنين جاب له ثاين قلب السيوف قال له بكم قال بميتين و نص سلم له خمسية وراح الى سوق الاسلحة درج بالبذدق قال له واحد بكم البندق قال له بثلاث مية ربال قال له طيب آخذ البندق منك بالثلاث مية ولكن شرط القض 7 البندق و اضربه ان فيه قطب 8 والا سارط 9 و الا بشعه 10 البندق اردّ قال له طيب انقض رام و نقض البندق حصل البندق مقطوب الرد البندق قال له لو تقول لي بعشرة ريال ما آخذة راح درج 12 بالسيوف قالوا له الواحد بخمسين و الثَّاني اربعين راح الى سوق أنَّني قالوا له في با همسين ١٦ اربعين و با اربعين ثلاثين رد يبغى الخمسين قالوا له اربعين باع بالاربعين با اربعين قالوا له ثلاثين باع بالثلاثين و البندق رد وباءه بعشرة ريال ضوى الى بيته و معه من شق الخمسمية ثمانين قال للحرمة و الله فلان بن فلان سوى في قصّة 14 ما بعد حد سواها قالت له ايش سوى فيك حكى لها قالت له طيب رويفا ايالا قال لها طيب يعبر هنا كل يوم الى المسجد خذ الما اليوم الذاني كانوا منقظرينه جزع 16 قبلهم قال لها هذا قالت له اذا رد من المسجد رج الى دكانه و افتج له

<sup>&#</sup>x27;to send for, call.' وصى 'to send for, call.'

it should be; let it be.' مسو pronounced saw مسو pronounced saw مسو

b (easily.' وفك 'as you know,' i.e., do as you like.

<sup>&#</sup>x27;to take to pieces.' قطب 'a joint.'

a defect by which it fails to fire.

<sup>10 &</sup>amp; knot, scratch; defect.

i joined, having a joint.' الرج الله ' to walk, move.'

<sup>&#</sup>x27;the 50 dollars one.' ابو الخمسين = با خمسين

<sup>&#</sup>x27;to pass by: جزع to pass by: مجزع الم

في ذكر النسا اذا انصت 1 قل له معي اختي في البيت ان كان تبغاها زواج اعطيك اياها رام قال له تروينا إياها قال له باشاور أن كان 2 قالوا الناس أرويها أياة با ارويك اياها قال له طيب راح الى عند الحرمة قال لها انه يقول ابغاها لكن بشرط يشوف قالت لها طيب اذا عدوة طرب 3 مذه وهاته الى هذا وقعديد في المحل ذا اذا قعد طرب من الجارية وقل لها هاتي ماء أذا قد الجارية قيمة 4 عنده با اندر قبله قال لها طيب خد الما اليوم الثاني راح الى عنده قال له قم با ارویک البنت راح ویالا الی البیت حسب ما قالت له الحرمة سوى قال له طيب الحقني 5 الى الدكان راح بعدة قال عجبتنا البنت تعطينا اياها كم تبغى منا قال ثلاث الأف ريال زاد الكلام و نقص و سدوا على الفين و واعدة للزواج يوم الثالث خذوا الما اليوم الثالث و حضر للعقد طربوا من القاضى و عقد خذوا الما الليل دخل علمروس حصلها صاهي الذي شافها اخذ الما اليوم الثاني رام الى عند القاضي مشتكي زهمه 6 القاضي قال له القاضي خبر علم 7 قال له لا علم ولا عبر امس عقدت لي بفلانه أخت فالن صدر 8 لي جارية و ذا الحين ابغيت منه ما قال الشرع وخذ خبرة قال له طيب احضر عدوة الظهر رام القاضي الى عند المزوج له قال له فلان جا مشتكي منك قال له ليش قال الله يقول انك عقدت له باختك وصدرت له جارية وهذا ما يصلح ولا هذة مهوة 9 الخيدار قال له اما انا عقدت له باختى و صدرتها هي بنفسها قال له طيب يقول يبغى منك ما قال الشرع قال له مقادي ١٥ له قال له القاضي احضر الظهر غدوة حضروا الظهر في اليوم الثاني اندعي ١١ عليه بقولة فالن بن فالن خطبت عنده في اخته و اخذ مني الفين ريال وعاب في 12 صدر لي جارية صيبه ١٥ و الزمد ما خسرته في وليمة وغير قال له هذا كلامك يا عاد شي معك قال هذا قال طيب اسمع يا قاضي المسلمين فلان بن فلان خطب عندي وتشرط أن أرويه و رويته من بعد ما ينظر أقول بيحجاني الله لا أصطاب له

to listen.

<sup>2</sup> ال for ال كاك 1.

الحوب من المرب من المرب من المرب من المرب المر

<sup>&#</sup>x27;to call' زهم 6 'to call' الحقني

<sup>&#</sup>x27;Any news?' 'What news?'

<sup>&#</sup>x27;to send.' صدر 8

ection.' مهرة 9

<sup>&#</sup>x27;agreeing, consenting.'

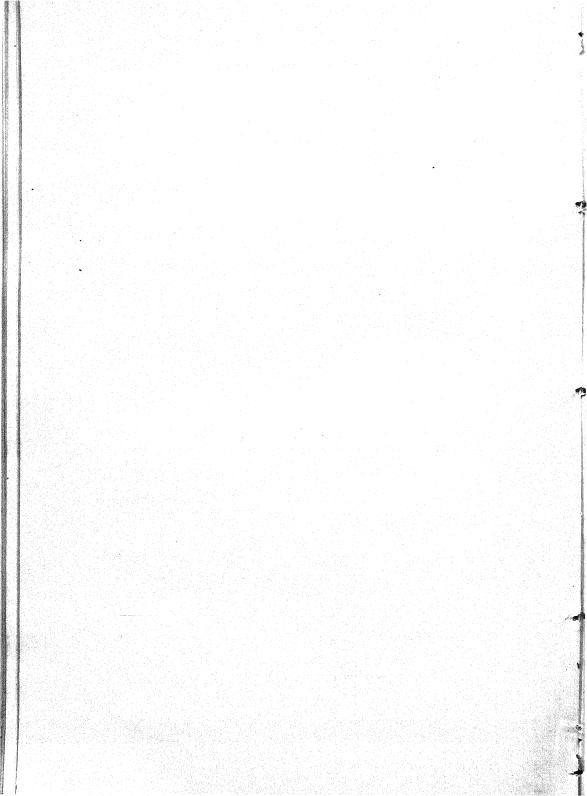
<sup>&#</sup>x27;to state his claim against.' ادعى على = اندعى على ال

<sup>&#</sup>x27;to deceive, trick.' عاب في 19

<sup>&#</sup>x27;catch hold of him.'

بشيٌّ مما ادعى به رد ذاك قال له اما انا خطبت في اختك ولا عطيتنا الذي شفقها قال له الذي رويتك اياها الذي جابت الها و سقتك هي هانك يا حد ثانية عنداق قال له الشرط بيننا على الذي عبرت ما هو على التي جابت الماء قال له ما حد عددي الا زوجتي و الحتي هذه التي اعطيتك اياها حكم عليه القاضي بيمين يا هذه الذي اعطيتها قالن انها اختك غلبت الما اعطيت اليمين 2 الزمك قد ما عُسرة فلأن و زوج الحرمة ماكان يعرف انها خنثى راح و اعطى اليمين بعد ما اعطى اليمين رد الذي اخذ الجارية قال حسرت الفين ريال ولا يمكن اسيرها هكذا قام يبغى يجامعها حصل ذلا خنثى زهم العبد وقال له ودها الى بيت اهلها واعطاها الثلاث جات الى بيت اهلها - من بعد الحرمة الذي كادت الرجل طلبت من. ابوها البيت الذي تربت فيه غلب ابوها ما يعطيها البيت وصت للعبد حق ابوها قالت له يا مدارك با اقول لك كلام ولا تتكلم به عند احد قال لها طيب قولي يا حدابه قالت له و با نسوي حسب ما اقول لك قال با اسوي قالت له اذا نام سيدى وطرح الجذبية في الرفقة شلها والحرحها هابط قال لها طيب قالت له لكن بكون ثلاث اربع لبالي تسوي هكذا قال لها طيب راح العبد حد الى الليل خلى سيدة لما ينام شل الجنبية من الرفقة وحطها على الأرض قام سيدة الصبح حصل الجنبيد على الارض قال عجب الجنبيد حقى طرحتها في الرفقة و صبحت في الارض يا الا نسيت ما طرحتها في الرفقه خد الما الليلة الثانية قعل هكذا العبد صبحت الجنبية في الارض قال ايش هذا يدر الجنبية البيت مسكون ولا عاد يصلح لي لكن انتظر الليلة خذ الليلة الثالثة وشل الجنبية العبد وطرحها عند الباب داخل البيت خذ الما اليوم الثالث ما حصل الجنبية نهر با يفتح الباب حصل الجنبية في هابطي البيت الحلى المكان قال المكان مسكون ولا امسي فيد اخذ بعد كم من يوم و باع المكان على البنت بقاصر قيمة وحلت البنت في المكان - و رحت من عندهم وهي وزوجها في البيت في سبعة. عشر نعمة 🌞

<sup>1</sup> فاب 'to refuse.' وطي اليمين means to take, not to give an oath.



56. Proposed correction with regard to the reading of an inscription on some of the Suri dynasty coins.—By Col. C. E. Shepherd, Indian Army.

In the Journal of the Asiatic Society of Bengal, Vol. LIX, Part I of 1890, page 15A, Dr. Hærnle has a paper—"On the Copper Coins of the Suri Dynasty." In this paper Dr. Hærnle refers to an expression on these coins; he says, p. 155: "Thus on the "obverse legend which ought to run

فريد الدين و الدنيا or فريد الدنيا و الدين

" commonly exhibits the following form-

فريد الدين الدنان

"The w (nún) of the ud dinan is generally placed across the

"! (alif) of " (ná)."

In the British Museum Catalogue "Coins of the Sultans of Delhi," and in Thomas' "Chronicles," there are many instances given under Shir Sháh, Islám Sháh, and Muhammad 'Adil Sháh, where the obverse inscription is quoted as

في عهد الاصير الحام الدين الدنان

Referring to the expression

الدين الدنان

Mr. Stanley Lane Poole in the B. M. Cat. speaks of it, p. XXVIII, as "a very peculiar formula," and Dr. Hærnle says, and says

correctly, that it is "absolutely unmeaning."

It is therefore obviously erroneous. The word dinān, is given in Richardson's dictionary as meaning "winejars," and Kazimirski, in his Arabic-French dictionary, gives the meaning as "Jarre surtout celle dout le bas est arrondi et que l'on enterre pour qu'elle puisse rester debout."

The contention in Dr. Hærnle's paper leads one to the conclusion that he favours the idea that the final word of the phrase should be wis and not still that the error has arisen by a blunder of the die-sinker. This idea is rather a shirking of the

question than an unravelling of the difficulty.

Against accepting the view of a blunder in the word دنيا,



there is the presence of a final  $\omega$ . The diesinker could hardly have blundered to the extent of putting a clear  $\omega$ . Dr. Hærnle himself says: "The  $\omega$  (nún) of ud- $din\bar{a}n$  is "generally placed across the top of the ! (alif) "of  $\Box$  (ná). It may be seen in the obverse "margin of fig. 2 and on the face of fig. 13, "29, 38. In fig. 17  $\omega$  is placed by the side of

"in the usual position."



In the Bodleian library collection there is a coin of Shír Sháh's No. 556 that also gives a clear  $\omega$  as final letter at the end of the last line. The letters in the middle of the last word, however, in this specimen are off the coin.

In none of the figures published of these Suri coins can the

be absolutely accepted for want of the dot over the ...

There is another solution that, it is hoped, may meet the case and receive the assent of numismatists, and that is that the final word is intended for (dayyán).

In No. 13 of Dr. Hærnle's paper, there are shown two distinct



•• under the s of the final word, and to the left of the date  $\P$ : the middle letters are unfortunately wanting in this specimen, being off the edge. The syllable hitherto usually read G might be read G and the two dots pointed out in No. 13 would lend support to this reading of them.

In Richardson's Dictionary, Arabic, Persian and English, (dayyān) is given as: "a weigher of good and evil, hence an "epithet of God—computing, settling accounts with another, a "judge—an umpire—an administrator—religious." In his Arabic-French dictionary by A. de Biberstein Kazimirski, vis given as "Qui retribue sans faute le bien ou le mal; de lá Retributeur,

Dieu 2 Judge, 3 administratem gérant."1

It is suggested therefore that the inscription was intended to read العلم الدين الد

That Shir Shih was particularly strong on the question of justice is shown by the following extract from Brigg's translation of the Ferishta. In Vol. II in the chapter on "Sheer Shah Soor," p. 100, in describing the departure of Fureed to take charge of his father's jageer that Fureed said: "That the stability of every

<sup>1</sup> Lane, in his dictionary, gives et (dayyan) as a requiter who neglects not any deed, but requites it, with good and with evil: a subduer—a judge—a ruler or governor—a manager, conductor or an orderer of affairs of another.

"administration depended on justice, and that it should be his "greatest care not to violate it either by oppressing the weak or by "permitting the strong to infringe the laws with impunity." He originated this phrase on his coins; his immediate successors naturally kept on the complimentary epithet.

The expression الدنيا و الدين is generally attached to the lagab



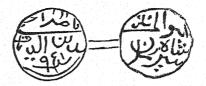
of the Sultan, in the case of Shir Shah, see Dr. Hærnle's No. 15, where we have also Thomas' Nos. 359, فريد الديا و الدين 361, where we have on Islám Sháh's coins and the many predecessors جالل الدنيا و الدين of the Suri dynasty who used the same

expression الدنيا و الدييا on their coins, but always attached to the lagab, will readily come to the recollection of the veriest tyro in Indian numismatics.

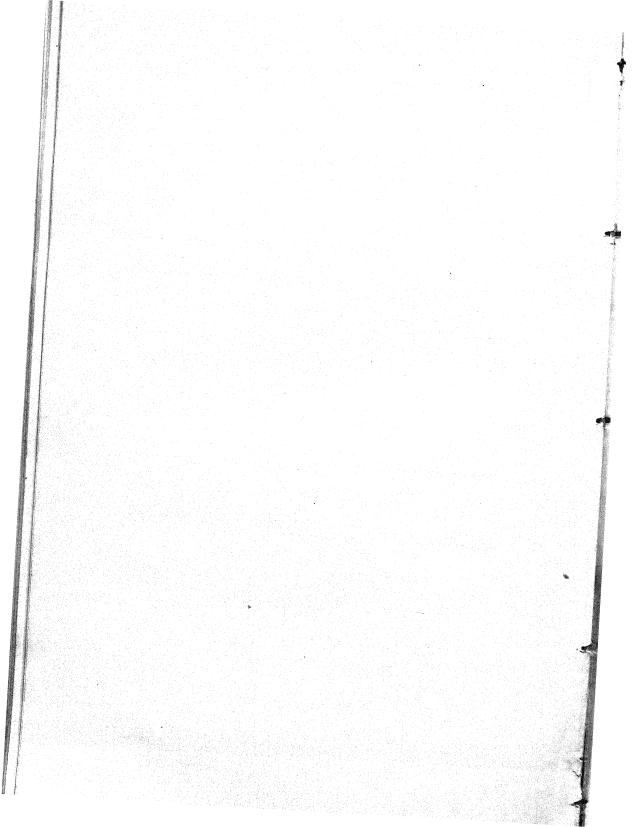
It is therefore hoped that numismatists interested in coins of the Delhi Sultans will see their way to accepting this inscription, used solely by the Suri dynasty, having the expression الحامر الدين in the middle as terminating in الديان (ud-dayyán), anyway until a better solution is arrived at, and read the whole obverse as translated as: "In the time of the Amír, the protector of religion, the just ruler."

Since despatching the above paper, the following example of a Shir Shah coin has been met with. The diacritical marks to the left of the date can only belong to the يان of ريان and would seem to put any other reading out of the question, making, as it does, sense which the hitherto accepted reading does not. A copy of the coin from Volume LIX, of the J.A.S.B. for 1890, Plate VII,

fig. 12, is attached for ready reference.



Two similarly placed dots in same volume, Plate III, fig. 13, have already been noticed in the body of this paper.



# 57. Some notes on the so-called Mahīpāla Inscription of Sarnath.— By Arthur Venis.

In the annual report of the Archæological Survey of India, 1903-04 (pp. 222,223), Mr. J. Ph. Vogel resumes a discussion of this important document. While making no material changes in the transcript and version of the inscription published by Professor Hultzsch (Indian Antiquary, Vol. XIV, 1885), Mr. Vogel offers valuable suggestions as to the bearings of the record on the remains at Sarnath. It is these that give to Mr. Vogel's article its main interest at the present time. And I propose to consider his article briefly from this point of view.

The inscription is dated Samvat 1083. It states that the brothers Sthirapāla and Vasantapāla were subordinate to an illustrious King Mahīpāla at Kāśī; and that they repaired (1) a dharmarājikā, (2) a dharmacakra, and built (3) "this new Gan-

dhakutī (shrine) made of stone."

Sarnath was undoubtedly the site of these buildings. We do not know the exact spot where the broken Buddha-image, which carries our inscription, was recovered. And it seems a pity that no reference whatever has been made in the present A. S. Report to Mr. F. O. Oertel's most successful excavations in 1904-05, from which fresh light might be expected on the identification of the buildings mentioned by the brothers Sthirapāla and Vasantapāla. [The A. S. Report for 1903-04 has only recently appeared in 1906; and at page 226 of it space is found for a post-scriptum to Mr. Vogel's contribution but on a different subject.]

I now turn to the identifications proposed by Mr. Vogel, and

take them in the order already indicated.

I. The dharmarājikā of the inscription, he thinks, is the great Stūpa which the villagers of Sarnath now call Dhamek. Mr. Vogel's points are these, briefly: (a) the word dharmarājikā is derived from the word dharmarāja; (b) Aśoka was the Dharmarāja of the Buddhists; therefore (c) the word dharmarājikā means 'a stūpa erected by Aśoka '; (d) from this word the current

name dhamek can be derived.

I deal with these points seriatim: (a) Mr. Vogel's derivation of the word in the sense of something made or caused to be made by a dharmarāja is not contrary to grammar. But the word may, with equal propriety, be resolved into dharma+rājikā, meaning 'a line or field or spot for dharma'—rājikā being a regularly formed derivative from the noun rāji. This second explanation is more likely to be the true one. But even if Mr. Vogel's derivation be accepted, his reasoning to the conclusion in (c), namely, that the word dharmarājikā in our inscription means 'a stūpa erected by Aśoka' is hardly convincing. Nor again as to (d) is the word dharmarājikā the only possible source of the word dharmek, even if this derivation be altogether correct. I should like to propose the word dharmekṣā as the source of dhaměk or dhaměkh (as it

often sounds to my ear from the lips of the village folk around Sarnath). This etymology would not be irregular, I believe; and, as to the meaning of the Sanskrit word, I need scarcely point out that it would naturally extend to 'the place where Dharma was pondered' and so become a most appropriate name for the holy ground of Sarnath. The suggestion itself I owe to a passage in Jinaprabha's Tirthakalpa, a MS. of which is dated Samvat 1669:—"In this quarter of Vārāṇasī, at a distance of three krośas, is a place named Dharmekṣā, where there is a Bodhisattva's home (shrine), whose towering crest is gently touched by the sky."

## अखां को श्राचितये धर्मेचा नाम सिववेश्रो यच नो धिसत्त्वस्थोचे-स्तरश्चिखरच्चिनगगनमायतनम ॥

[This M.S. has been very kindly lent to me by the Yati Dharmavijayī, Head of the S'vetāmbarapāthaśālā, Benares City. I read ভাৰা instead of ভাৰাৰ.]

About Sarnath, Jinaprabha says no more; but, possibly, the words bodhisattva, sikhara and ayatana may, in their present context, have distinct significance for the Buddhist archæologist and thus contribute, if only negatively, to the problem of identifying the Dharmarajika which the Pala brothers restored. It is of course easy to understand how in the course of years the word dhamek should have become the name of the most conspicuous

object left standing on a holy site.

II. Mr. Vogel is of opinion that the Dharmacakra of the inscription is the temple which Yuan Chwang describes as near the Dharmarājikā and enshrining a life-size image of Buddha. I am inclined to go further and hazard the conjecture that the temple which Mr. Oertel has brought to light is the Dharmackra which the Pāla family "repaired" in the year 1026 A.D. But as against this conjecture I am bound to note that the word dharmacakra may mean a monastery or, at least, a dharmaśālā (cakra = samūha); and also (according to the Trikān daśeṣa) Buddha himself—a meaning that might extend to an image of Buddha. Then as to the "accessories"—sāngam dharmacakram, I am unable to suggest what they were; and I imagine that Mr. Vogel, when he translates the word sāngam by "completely," is in pretty much the same position as myself.

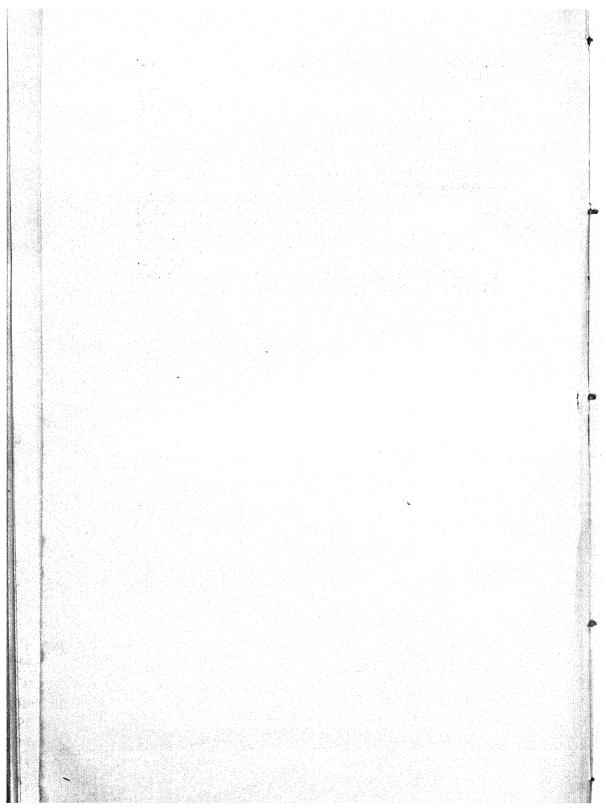
III. I follow him also in not attempting to locate the Gandhakutī—"this new shrine made of stone." We must wait for Mr. Oertel's report on his excavations. And there is much still for the spade to do at the Caukhaṇḍi, which is not more than half explored, and elsewhere at Sarnath. But meanwhile I must take leave to object to the translation given by Messrs. Hultzsch and Vogel of the compound aṣṭamahāsthānaśailagandhakutīm, viz., shrine of stone from eight holy places. The idea of stones brought from eight places, might have been extracted from the compound, if it had contained the word śilā instead of śaila-

Vol. II, No. 9.] The Mahīpalā Inscription of Sarnath.
[N.S.]

But as it reads in the inscription, the compound, when resolved into sentences, can strictly mean no more than this:—the shrine is made of stone; and, in the shrine are, or to it belong, eight great places (positions). I would therefore make over the word mahāsthāna, 'great or lofty place or position,' as an architectural term, to the Indian archæologist to explain, or even to explain away, according to his needs. A 'mere grammarian,' suskavaiyākaraṇa,

like myself, does well to attempt no more.

As to the text of the inscription, I would offer the following remarks: The word gurava in line I is surely ananvita, unless it is a title or a class-name. Can it be the name of a class of men who are connected with pūjā in temples—a meaning which the word gurava bears, I am told, in Western India? Iśāna, Ghaṇtādi and Gauda are happy readings, for which we are indebted to Professor Hultzsch. Personally I am unable to see these akṣaras. And what I seem to see is paśvādi instead of ghaṇtādi.



58. Note on the Houbara or Bastard Bustard (Houbara Macqueenii).

—By Lieut.-Colonel D. C. Phillott, Secretary to the Board of Examiners, Calcutta.

The Arab name for the bird is  $\hbar ub\bar{u}ra$  and  $\hbar ub\bar{u}rah$ : the Persian  $\bar{u}h\bar{u}-barra$  and  $h\bar{u}barra$ . The Baluchis call it charz, a name applied in Oudh to the Florikin. In Pushtu it is called tsora,  $ch\bar{u}ra$  and  $ts\bar{u}ra,\bar{r}$ . In the Punjab it is known under various names, the commonest being  $til\bar{u}r$ : its other Panjab names are kharmor, khanmor, and in the Kapurthala State  $tughdar\bar{\iota}$ . In some districts it is called gurain and gurain $\bar{\iota}$ , a name elsewhere

applied to the great Indian Bustard.

The houbara is a winter visitor to India, and enters apparently by all the passes on the N.-W. Frontier. Arab falconers of Baghdad and Basra have informed me that they have taken the eggs and reared the young under a domestic fowl, and Persians have told me the same story. An English sportsman stated to me that he once shot a specimen near Bannun as early as the end of August; but the earliest date I have myself observed one is the 9th October, in the Tochi Valley. In the Dera Ghazi Khan district I got trustworthy information of three on a tenth of September, but I failed to put them up. These birds leave India in February and March, and are then fat and strong on the wing, and a much more difficult quarry for a falcon than in the early winter months. On a first of April I saw two near Kohat, and on a first of May I hawked and killed one in Parachinar close to the Paiwar Kotal. The heaviest weight recorded by me is  $4\frac{1}{2}$  lbs.

Very occasionally a stray bird stays down in India during the hot weather. Two hot seasons running, I had continuous information of a single bird near Kohat—perhaps a wounded bird, or perhaps one more silly than its fellows that had missed the moon and the last karavan of the season, and so got hopelessly 'left.'

The houbara's food is chiefly, but not entirely, vegetable. In the gram-producing district of Marwat, the seed is grown in a dry soil and left to be fertilized by the Xmas rains. The houbara that arrive in that part, pick out the grain from the ground, and fill their crops. They soon move on to the melon beds in the thal? district to feed on the seeds of burst and broken melons. Their favourite crops are, besides melons, the green leaves of mustard, turnip, and gram. They also feed on cotton, but to a less degree. In the spring, on their return migration, they are to be found in the stunted ragged wheat crops of the bare stony plains on the N.-W. Frontier; but whether they go there to feed on the green shoots, or on the weeds and insects to be found in the damp ground, I cannot say. At any rate wheat is not a favourite food of theirs. In Persia they do harm to the opium crop. In the Dera Ghazi Khan district they eat the manna that is in

Kapurthala falconers call the Great Indian Bustard tughdār.
 Thal; the sandy jungle districts of the Derajat are so called.

certain spots produced on the tamarisk. The following are some of the jungle fruits, etc., on which they feed, with their Punjab names:—

(1) The fruit of the *karel* (Capparis aphylla); the fruit when unripe is called *delha*, and when ripe, *pinjū*. (In the Derajat the unripe and ripe fruit are both called *delha*.)

(2) The fruit of the  $v\bar{a}n$ , wan, or  $j\bar{a}l$  (Salvadora oleoides); the fruit when unripe is called  $pekr\bar{i}$ ; when ripe,  $p\bar{\imath}l\bar{u}$ ; and

when dried, kokan.

(3) The fruit of the ber (Zizyphus Jujuba and Z. nummularia)

and the kokan ber.

(4) Three kinds of lāna, viz., khangan-khār! (Haloxylon recurvum); and allied plants, phesak lānī; and the lāna, which is called in the Derajat, ghalmī lāna, and is specially common in the "thal" districts.

(5) Jawāsā or camel thorn (Alhagi Maurorum).

(6) A plant called dodhuk in the Derajat; perhaps the alet\(\tilde{t}\) or yaleth\(\tilde{\tilde{t}}\) of other parts—dudhuk being applied to a family of plants that contain 'milky' juices.

(7) Janglī ajwain or pahārī ajwain, said to be a species of wild thyme: common in Parachinar. [Ajwain alone is

the Dill seed or plant.

The houbara is both gregarious and nocturnal, yet unlike geese and cranes it is not clamorous. How then does a flock avoid dispersing and losing its members? A scattered flock has some means of rallying, for rally when dispersed it does. The houbara appears to have scarcely any voice. If angered, or alarmed by being seized, it will snap its beak and emit a faint croaking sound.

When attacked by a hawk, it will puff itself up like a turkey cock, and charge the hawk, striking forwards with its powerful feet. I have seen a young and inexperienced peregrine completely knocked out of time by a blow from its wing. Its habit of ejecting a glutinous green fluid, from its vent, over a hawk that has: fastened to it, is well known to all falconers. The fluid besmears and soils the plumage, and should the houbara break away, effectually impedes the flight of the hawk. In spite of all that has been said on the subject, I am convinced that this is an unconscious and accidental weapon of defence, the action being the result of fear. In proof of this it may be stated that the houbara behaves in exactly the same way if suddenly frightened out of sleep and put up in mid-day. Further, when feeding on lāna, the fæces are like those of the domestic fowl, and it is only when the bird is grazing on mustard leaves or certain other crops that the "mutes" have their peculiar odour and consistency.

Tristam says that the houbara defends itself by ejecting

a fluid not only from the vent, but also from the mouth. The latter, however, is merely an accidental discharge after death, resulting from a crop freshly replete with juicy leaves. Its real weapon of defence is its protective coloration. The upper parts are destitute of any mark that can attract attention; the colours so perfectly harmonise with the surfaces on which the bird habitually rests, that whether squatting on yellow pat or amongst grey rocks, with its long neck stretched out on the ground like a sleeping camel, it is perfectly invisible. "Nature seems to have entered into a conspiracy" to cast a protective colouring over it, no matter what the surroundings. Even the piercing eye of a falcon is deceived and fails to distinguish the quarry from its squatting place, so great is the 'sympathy' between the two. Once I detected a houbara, hiding in a bush, merely by catching sight of its yellow eye. It is this power of hiding that has earned for it amongst Pathans the soubriquet of 'thief'-for to a Pathan mind the word thief suggests first an idea of stealth and cunning, and not dishonesty. Once, near dusk, on an open flat plain destitute of even a blade of dry grass, I flew a pregrine at an houbara that rose at some distance. I galloped after the peregrine to a spot where she had stupidly settled on the ground and was running about and searching. Just as I stooped to take up the baffled falcon, five houbara rose as it were out of the earth around me, within a radius of two yards. When flushed quietly, the houbara will fly low for some way, but after settling, it always runs for some little distance. If a single bird be pursued by a hawk, it will perhaps join its comrades, who will then form line and charge. If its comrades are scattered, it will endeavour to make some cover intervene between it and its pursuer, and will then turn aside a little and squat. If there is a nullah near, it will to a certainty make for its edge. When pressed by a hawk it will fly in large circles, being loth to leave the vicinity of its comrades. If, however, after being chased to a distance, it baffles the hawk and horsemen, owing to the broken nature of the country, it will squat only for a certain time, and will then make its way back to its comrades.

Though possessed of considerable powers of flight, it only takes to the wing when forced to do so. Though houbaras often spend the day in sleep at a considerable distance from the particular field they have selected as a feeding ground, they make their visits to and fro on foot, visiting the ground towards evening and leaving it about 8 A.M. in the morning. A party of six or eight of us once sat down on an embankment to wait, and watch for one that was known to visit that particular small and solitary mustard patch, the object being to get an easy flight for a young

I Blanford says that only a trained eye can detect a squatting houbara. Even a trained eye cannot detect it—unless of course the bird moves. It is quite a common thing for a chased houbara to dodge behind cover and squat, and for the falcon to settle within four or five feet and be baffled, even on bare ground.

and partially trained hawk. The accustomed hour for the houbara's visit having passed, the villager who owned the plot said it would not come that evening, and suggested beating for it in a certain As we remounted our ponies, the houbara surprised us by suddenly rising from the mustard. It had stolen in unper-

ceived, having eluded the vigilance of our trained sentries.

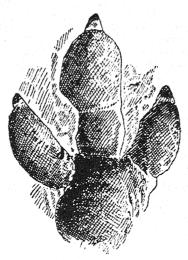
The objection of the houbara to take wing, known to all villagers, is the chief means of its destruction. The owner of a plot of cultivation notes the direction of the foot tracks. He then lays down, along the edge of the plot, and on the side the tracks enter the cultivation, a line of bushes or twigs, a span or more in height, leaving in it a doorway of about thirteen inches wide. stick is buried in the doorway, and to it is fastened a horse-hair noose, about five and a half inches in diameter, and made of ten or twelve twisted horse-hairs. "The houbara trips up to the obstruction and looks at it with disfavour. Then, like a lady in a messy street, who makes a circuit to reach a crossing, it turns aside and trips along the edge, till it reaches the opening, when it puts its feet in the noose and falls a victim to fastidiousness. If asked why, instead of hopping over the bushes it acted in this unnecessary manner, the silly bird would probably reply with the faulty logic not uncommon amongst humans, that 'it always did so,' and this is the only reasonable explanation of its conduct." This method of snaring is in the Punjab called lang lagānā. If a lang, arranged or disarranged, be seen near a plot, it is a sure sign that snares have been set some time or other, let the villagers swear to the contrary ever so loudly. (A little bakhshish will settle matters.) In Persia, instead of the line of bushes, the crop is railed in by a string, breast-high, the usual doorway being left open.

The result of all this tripping about is that the houbara leaves numerous tracks, and in the sand these retain their fresh appearance for weeks, nay for months. Rain is the only thing that obliterates them. To discriminate, the falconer must dismount and go on all fours and closely scrutinize the foot-prints. If the surface of the depression be smooth like the inside of an egg shell, the print is not more than a few hours old, but if rough as though sand had been peppered on it, the footprint is old. Even with this clue, the novice will find it no easy task to discriminate between the two. The track in the diagram is from a life-size photograph of a footprint made in clay. The only other desert footprint that a novice might mistake for an houbara's, is that of the stone-

plover, but the latter is far smaller.

The houbara is hawked in the Punjab, either with the Peregrine or the Chargh (Falco cherrug), but chiefly with the latter. Sometimes an eagle will join in the chase and then the falcon will probably give up, but not even Bonelli's eagle is fast enough to overtake a strong houbara in a stern chase. The Lagar (F. jugger) has also been trained to take it, but is too slow to do anything except kill on the ground. It can also be taken by a female goshawkere bulled of the transfer of the

Though shy by nature, houbaras speedily get accustomed to



Life-size diagram of the footprint of an Houbara in clay.

(From a photograph.)

certain sounds. Once, beating in the Jhang district with a long line of beaters, five houbara were roused, but did not take wing. At the end of the line, far away, was a young peregrine I wanted to 'make.' The Zaildar said, "Shall I make them lie down?" Without understanding in the least I replied, "Yes." He began to make the peculiar grunting noise of the Afghan camel men when grazing their camels, and the houbara, no longer suspicious, at once squatted. In the Jhang district the birds will sometimes feed in a turnip patch while the owner is driving his bullock at the well. Once at dusk I flew a young peregrine at some houbaras feeding in a small turnip patch, and the hawk killed on its edge. While I was feeding her up, the frightened houbara came back out of the jungle and began to feed close to me. A quiet flight with a hawk will not make houbara desert their feeding ground, but a gunshot, or galloping about after a hawk, will drive them away, at least for many days.

It is easy to beat through a country full of houbaras, and while the sun is up to find none. They will lie close, perhaps in the open, perhaps on the shady side of a bush, and let the beaters walk over them. Some run round the line or else conceal themselves in bushes. If in the line there is a keen goshawk, the number of houbaras seen in a day will be quadrupled. When the sun declines in the late afternoon, they do not lie close; as evening draws

in they are all on the move.

When a hawk is in the air, it is a matter of extreme difficulty to put up an houbara, or to get it to fly if put up. Indians (and perhaps Arabs and Persians), who care nothing for the flight but everything for the pot, prefer to hawk and kill the quarry on the

ground. The descriptions in certain books of coursing houbara with greyhounds, or riding them down, require explanation.

They are doubtless somehow or other true in the letter.

The wing bones, though large, appear to be brittle. Once in a stern chase, an old 'intermewed' chargh that always struck with force, came up with a wet sail and struck the houbara as she overtook it. The quarry dropped with a wing completely shattered. Both birds were flying in the same direction and were in the same plane. I relate the incident as it happened: it is difficult to account for it.

59. A Tibetan Almanac for 1906-1907 (สิริสิริมัน).—By Mahāmahopādhyāya Satis Chandra Vidyābhūṣaṇa, M.A., M.R.A.S.

I got a copy of a Tibetan Almanac for 1906-1907 l prepared by a learned Mongolian Lama living in Tibet a little to the north-east of Lhasa. It is replete with figures indicating constellations, stars, lunar mansions, auspicious and inauspicious days, etc., calculated according to the combined method of the Indian and Chinese astrologies. The Tibetans, like the Chinese, divide the year into 12 lunar months, each of which opens with the first day of the waxing moon and closes on the last day of the waning moon. As the lunar year is of less duration than the solar, an intercalary month is inserted almost every third year to make the lunar year agree with the solar. The current lunar year, which consists of only 354 days, began on the 24th February, 1906, and will terminate on the 12th February, 1907.

The author of the almanac examining the year through the Mirror of the Science of Time, makes various prognostications of which some are mentioned here. In the Tibetan Cycle of 60 years the special name for the current year is Fire-Horse, in which fire will predominate over other elements. The king of the year is Saturn, under whose malign influence meritorious people will suffer and thieves will prosper. Heavy rains will commence on the 12th July, 1906. But in the first part of the rainy season there will be scarcity of rains owing to which crops will be damaged. Fruits will be abundant, but there will be specks on them. The barley and wheat will suffer from eye-diseases. In the kingdom and in the houses of landlords, a great disorder will prevail. The rich will satisfy their hunger at the expense of the poor.

The solar eclipse that is due on the 14th January, 1907, will continue from 10-30 A.M. to 3 P.M. There will be two lunar eclipses, one on the 4th August, 1906, and the other on the 29th January, 1907, both commencing at sunset and continuing for nearly four hours.

The earth will quake thrice. The first earthquake will take place on the 12th May, 1906, the second on the 7th November, 1906, and the third on the 13th March, 1907.

The sun will commence turning towards the south on the 1st July, 1906, 2 and will return towards the north on the 30th December, 1906.

The solar and lunar days not being co-extensive with each other, some days are "cut off" (55%), and some again are retained as "excess" or "superfluous" (578%) in almost every month of the Tibetan year.

2 Vide the note on Summer and Winter Solstices at the end.

<sup>1</sup> This copy of the Tibetan Almanac for 1906-1907 was purchased by me for Dr. E. D. Ross from a Tibetan Lama at Darjeeling in June 1906.

The following are cut-off days :-

PRECEDING DAY.	CUT-OFF DAY.	SUCCEEDING DAY.	
The 21st day of the 3rd Tibetan month, corres- ponding to 14th May, 1906, is Monday.	The 22nd day of the 3rd Tibetan month.	The 23rd day of the 3rd Tibetan month, corresponding to 15th May, 1906, is Tuesday.	
The 14th day of the 4th Tibetan month, corres- ponding to 6th June, 1906, is Wednesday.	The 15th day of the 4th Tibetan month.	The 16th day of the 4th Tibetan month, corresponding to 7th June, 1906, is Thursday.	
The 6th day of the 5th Tibetan month, corres- ponding to 28th June, 1906, is Thursday.	The 7th day of the 5th Tibetan month.	The 8th day of the 5th Tibetan month, corres- ponding to 29th June, 1906, is Friday.	
The 17th day of the 5th Tibetan month, corres- ponding to 9th July, 1906, is Monday.	The 18th day of the 5th Tibetan month.	The 19th day of the 5th Tibetan month, corres- ponding to 10th July, 1906, is Tuesday.	
The 9th day of the 6th Tibetan month, corresponding to 30th July, 1906, is Monday.	The 10th day of the 6th Tibetan month.	The 11th day of the 6th Tibetan month, corresponding to 31st July, 1906, is Tuesday.	
The 12th day of the 7th Tibetan month, corres- ponding to 31st August, 1906, is Friday.	The 13th day of the 7th Tibetan month.	The 14th day of the 7th Tibetan month, corresponding to 1st Sept. 1906, is Saturday.	
The 5th day of the 8th Tibetan month, corres- ponding to 23rd Sep- tember, 1906, is Sunday.	The 6th day of the 8th Tibetan month,	The 7th day of the 8th Tibetan month, corres- ponding to 24th Sept., 1906, is Monday.	
The 27th day of the 8th Tibetan month, corresponding to 15th October 1906, is Monday.	The 28th day of the 8th Tibetan month.	The 29th day of the 8th Tibetan month, corres- ponding to 16th Oct., 1906, is Tuesday.	
The 9th day of the 9th Tibetan month, corres- ponding to 26th Octo- ber, 1906, is Friday,	The 10th day of the 9th Tibetan month.	The 11th day of the 9th Tibetan month, corres- ponding to 27th Oct., 1906, is Saturday.	

PRECEDING DAY.	CUT-OFF DAY.	Succeeding day.
The 2nd day of the 10th Tibetan month, corres- ponding to 18th Novem- ber, 1906, is Sunda.	The 3rd day of the 10th Tibetan month.	The 4th day of the 10th Tibetan month, corresponding to 19th Nov., 1906, is Monday.
The 26th day of the 10th Tibetan month, corresponding to 12th December 1906, is Wednesday.	The 27th day of the 10th Tibetan month.	The 28th day of the 10th Tibetan month, corres- ponding to 13th Dec., 1906, is Thursday.
The 1st day of the 12th Tibetan month, corres- ponding to 15th Janu- ary, 1907, is Tuesday.	The 2nd day of the 12th Tibetan month.	The 3rd day of the 12th Tibetan month, corres- ponding to 16th Jan., 1907, is Wednesday.
The 25th day of the 12th Tibetan month, corres- ponding to 8th Febru- ary, 1907, is Friday.	The 26th day of the 12th Tibetan month.	The 27th day of the 12th Tibetan month, corresponding to 9th Feb., 1907, is Saturday.
The 19th day of the 1st Tibetan month of the next year, correspond- ing to 4th March, 1907, is Monday.	The 20th day of the 1st Tibetan month of the next year.	The 21st day of the 1st Tibetan month of the next year, correspond- ing to 5th March, 1907, is Tuesday.
The 24th day of the 2nd Tibetan month of the next year, correspond- ing to 7th April, 1907, is Sunday.	The 25th day of the 2nd Tibetan month of the next year.	The 26th day of the 2nd. Tibetan month of the next year, correspond- ing to 8th April, 1907, is Monday.

The following are excess or superfluous days:-

PRECEDING DAY,	EXCESS OR SUPERFLUOUS DAY.	Succeeding day.
The 26th day of the 3rd Tibetan month, corres- ponding to 18th May, 1906, is Friday.	The 27th day of the 3rd Tibetan month, corresponding to 19th and 20th May, 1906, is Saturday and Sunday.	The 28th day of the 3rd Tibetan month, corres- ponding to 21st May, 1906, is Monday.

PRECEDING DAY.	Excess or superfluous	SUCCREDING DAY.  The 4th day of the 5th Tibetan month, corresponding to 26th June, 1906, is Tuesday.	
The 2nd day of the 5th Tibetan month, corresponding to 23rd June, 1906, is Saturday.	The 3rd day of the 5th Tibetan month, corres- ponding to 24th and 25th June, 1906, is Sunday and Monday.		
The 22nd day of the 5th Tibetan month, corresponding to 12th July, 1906, is Thursday.	The 23rd day of the 5th Tibetan month, corres- ponding to 13th and 14th July, 1906, is Friday and Saturday.	The 24th day of the 5th Tibetan month, corresponding to 15th July, 1906, is Sunday.	
The 19th day of the 7th. Tibetan month, corresponding to 6th September, 1906, is Thursday.	The 20th day of the 7th Tibetan month, corresponding to 7th and 8th Sept., 1906, is Friday and Saturday.	The 21st day of the 7th Tibetan month, corresponding to 9th Sept., 1906, is Sunday.	
The 25th day of the 8th Tibetan month, corres- ponding to 12th Octo- ber, 1906, is Friday.	The 26th day of the 8th Tibetan month, corres- ponding to 13th and 14th October, 1906, is Saturday and Sunday.	The 27th day of the 8th Tibetan month, corres- ponding to 15th Oct., 1906, is Monday.	
The 13th day of the 9th Tibetan month, corresponding to 29th October, 1906, is Monday.	The 14th day of the 9th Tibetan month, corresponding to 30th and 31st Oct., 1906, is Tuesday and Wednesday.	The 15th day of the 9th Tibetan month, corresponding to 1st Nov., 1906, is Thursday.	
The 18th day of the 10th Tibetan month, corresponding to 3rd December, 1906, is Monday.	The 19th day of the 10th Tibetan month, corres- ponding to 4th and 5th Dec., 1906, is Tuesday and Wednesday.	The 20th day of the 10th Tibetan month, corresponding to 6th Dec., 1906, is Thursday.	
The 10th day of the 12th Tibetan month, corres- ponding to 23rd Janu- ary, 1907, is Wednesday.	The 11th day of the 12th Tibetan month, corresponding to 24th and 25th Jan., 1907, is Thursday and Friday.	The 12th day of the 12th Tibetan month, corres- ponding to 26th Jan., 1907, is Saturday.	
The 13th day of the 1st Tibetan month of the next year, correspond- ing to 25th February, 1907, is Monday.	The 14th day of the 1st Tibetan month of the next year, corresponding to 26th and 27th Feb, 1907, is Tuesday and Wednesday.	The 15th day of the 1st Tibetan month of the next year, corresponding to 28th Feb., 1907, is Thursday.	
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# Vol. II, No. 9.] A Tibetan Almanac for 1906-07. [N.S.]

The most auspicious days for bathing (ablution) are the following:-

TIBETAN DATE.	Day.	Corresponding English Date.	Remarks.
The 9th day of the 3rd Tibetan month.	Wednes- day.	2nd May 1906.	মূমত্বাহ্নাথ্ন। Sins will be cleansed by washing oneself on this day with water.
The 4th day of the 5th Tibetan month.	Tuesday.	26th June 1906.	মূমনুম ইন্ন্ন। Sins will be cleansed by washing on this day.
The 20th day of the 9th Tibetan month.	Tuesday.	6th Nov. 1906.	মূর্ম বুম ই্থন ব্ন   Sins will be cleansed by washing on this day.
The 7th day of the 11th Tibetan month.	Saturday.	22nd Dec. 1906.	মৃদ্ধ দুক ইনা বনা Sins will be cleansed by washing on this day.
The 6th day of the 1st Tibetan month of the next year.	Monday.	18th Feb. 1907.	নানুম বুম উন্দ   One will attain a long life by washing on this day.
The 8th day of the 2nd Tibetan month of the next year.	Friday.	8th March 1907	ন্দুরান্ত্রাস্থ্রান্ত্রা Sins will be cleansed by washing on this day.

Some of the days most auspicious for starting business are mentioned below:—

TIBETAN DATE.	Day.	Corresponding English Date.	Remarks.
The 17th day of the 4th Tibetan month.	Friday.	8th June 1906.	กูสาลรัฐรา Accomplished.
The 20th day of the 4th Tibetan month.	Monday.	11th June 1906.	ন্ম শুন   Accomplished.
The 19th day of the 5th Tibetan month.	Monday.	9th July 1906.	मान सुर। Accomplished.
The 18th day of the 8th Tibetan month.	Friday.	5th Oct. 1906	मृत्रक्षेत्र   Accomplished.
The 22nd day of the 8th Tibetan month.	Taesday.	9th Oct 1906.	「元利"報 <b>つ</b> Successful.
The 17th day of the 9th Tibetan month.	Saturday.	3rd Nov. 1906.	「元初・調コ・資子」 Successful.
The 6th day of the 11th Tibetan month.	Friday.	21st Dec. 1906.	र्नेदेश-मुत-क्षुर । Successful.
The 19th day of the 11th Tibetan month.	Thursday.	3rd Jan. 1907.	र्देशम्बर्धाः Successful
The 27th day of the allth Tibetan month.	We said to	11th Jan. 1907.	رَدِّهِ بِإِمْ مِنْ الْمُعْدِدِ الْمُعِدِدِ الْمُعْدِدِ الْمِنْ الْمُعْدِدِ الْمُعِدِدِ الْمُعْدِدِ الْمُعِيمِ الْمُعْدِدِ الْمُعِيمِ الْمُعْدِدِ الْمُعِدِي الْمُعْدِدِ الْم

TIBETAN DATE.	DAY.	Corresponding English Date.	REMARKS.
The 22nd day of the 2nd Tibetan month of the next year.	Friday.	5th April 1907.	र्देशम्बर्धः।
The 28th day of the 2nd Tibetan month of the next year.	Wednes- day.	10th April 1907.	ਜ਼੍ਹਾਰ'ਤੁ'ਤ⊏'  Successful.

Some of the inauspicious days are mentioned below :-

TIBETAN DATE.	DAY.	CORRESPONDING ENGLISH DATE	REMARKS.
The 4th day of the 4th Tibetan month.	Sunday.	29th May 1906.	डेच्चेंद्र। Fatal.
The 23rd day of the 4th Tibetan month.	Thursday.	14th June 1906.	역제도에 Bad day.
The 20th day of the 9th Tibetan month.	Tuesday.	6th Nov. 1906.	도독·영미  Bad day.
The 11th day of the 2nd Tibetan month of the next year.	Monday.	25th March 1907.	ਲੇ ਸ਼੍ਰੌਨੀ Fatal
The 27th day of the 2nd Tibetan month of the next year.	Tuesday.	9th April 1907.	र्श्नेमार्श्वेर। स्टेम्स। Burnt. Blind.

On the undermentioned days poisonous snakes (3, 711) will rise from beneath the earth causing diseases to people inhaling their breaths:—

13th May 1906; 16th May 1906; 30th May 1906; 10th June 1906; 27th June 1906; 8th July 1906; 10th August 1906; 27th August 1906; 8th October 1906; 9th October 1906; 13th October 1906; 15th October 1906; 17th October 1906; 19th October 1906; 21st October 1906; 24th October 1906; 26th October 1906; 18th November 1906; 19th November 1906; 19th January 1907; 20th January 1907; and 14th February 1907.

The Tibetan Astrology, which combines in itself the calculations of the Chinese and Indian Astrologies, has been made considerably complex by the inclusion in it of the Buddhist Metaphy-In the Tibetan Almanac there are noted not only the auspicious and inauspicious junctures (योग होंद्र ) of the Indian Astrology such as Siddhiyoga (सिद्धियोग न्दिशः भूतः भूतः हिन् ) etc., but also favourable and unfavourable prognostications are made from the Chinese diagrams (Pah-Kwah, 🏋 🏳) such as Li (Fire), Khon (Earth), Dwa (Iron), Khen (Sky), Kham (Water), Gin (Hill), Zin (Wood), Zone (Air), and Yog (Hare), Hbrug (Thunder), Sbrul (Snake), etc. Terms of the Tibetan Metaphysics are also assigned to particular days with a view to mark them as auspicious or inauspicious. Thus days are marked as राद्यादा ৭১ টুর। ব্যানিমা (Avidyā, Saṃskāra, Vijñāna), etc. The influence of the Indian Astrology seems, however, to be predominant. Thus, though the first month of the Tibetan year begins in February, the Tibetan Almanac opens with the 3rd Tibetan month in April, corresponding to the first month of the Hindus.

SUMMER AND WINTER SOLSTICES.

## (५५२ के सर्हेगा ५ मुक्के सर्हेगा)

In the Tibetan Almanac under examination, the Summer Solstice is noted on the 1st July, 1906. As a matter of fact, according to the European Astronomy, the Summer Solstice falls this year on the 21st June. The works of some of the Indian Astrologers such as the Siddhānta Siromani of Bhāskarācāryya (1150 a.d.), Āryya Siddhānta of Āryya Bhata (5th century a.d.), Graha-Lāghava of Ganeśa Daivajña (1520 a.d.), etc., perfectly agree with the European astronomical works as to the

date of the Summer Solstice falling on the 21st June.

According to the Sūryya Siddhānta (about 250 a.d.), Bhāsvatī of Satānanda (1089 a.d.), Siddhānta Rahasya of Rāghavānanda (1591 a.d.), etc., however, the Summer Solstice falls on the 23rd June. The astrological works belonging to the school of Sūryya Siddhānta are generally accepted as authoritative in India. Copies of these works were introduced into Tibet in the old days. So the Summer Solstice should have been noted on the 23rd June in the Tibetan Almanac. But this has not been done. The reason is this:

According to the school of the Sūryya Siddhānta, the date of the Solstice changes by one day at the interval of 66 years and 8 months. The Summer Solstice first commenced falling on the 23rd June in 1899 A.D. It fell on the 1st July in 1499 A.D.,

and continued to fall on that date till 1565 A.D.

This shows that the Tibetans have not reformed their calendar since 1499 A.D.-1565 A.D. They must have got their astrology from India before 1499 A.D.-1565 A.D., and made necessary corrections every year up to 1499 A.D.-1565 A.D., in which years the Summer Solstice fell on the 1st July. Since 1565 A.D., they have been following the Tibetan version of the Indian Astrology but have not introduced the necessary corrections as have been done in India. This shows that the intercourse between India and Tibet in intellectual matters practically stopped about 1565 A.D.

#### POST-SCRIPT.

While the foregoing notice of the Tibetan Almanac of the Fire-Horse year (1906-07) was passing through the Press, Mr. E. H. C. Walsh, Commissioner of the Burdwan Division, very kindly sent me a copy of the standard almanac of Tibet of the Water-Hare year (1903-04), which he had been using during the late Tibet expedition and which on its first and second pages contains the following Tibetan verse (of salutation):—

र्यय-देवट्ट स्थान्त्र स्थान्य स्थान्य

" I salute the Sumeru-like King of sages, the heart-exalter, the goldenly sublime over this earth, the transcender of the four main stages, who is well embraced by that Incarnate Pair of

Righteousness, viz., the Sun and the Moon."

Side by side with the Tibetan lines there are also four Sanskrit lines written both in Lantsha and Tibetan characters, and evidently composed by the Sanskrit-knowing Lama employed under the Lhasa Government, which were inserted as the Sanskrit equivalents of the Tibetan lines and run as follows:—

यूट्स्कृपागोत्र सुवर्णभूमि चार्यस्ममानं विचतुःक्रमं वा । धन्माङ्गसूर्योद्धयां सुनीनम् नन्मः प्रणे मौन-ईश्रं सुनेसम्॥

As the Sanskrit verse composed by the Lama seems not to be quite accurate, I append a Sanskrit translation of the Tibetan lines as follows:—

प्रिश्वतिचित्तोत्यादं सुवर्णधराया चन्युद्भतं समासविचतुरसोपानं धन्ममूर्तिस्येन्द्वयुगलखालिक्षितं सुनीन्द्रसुनेसं नमामि॥

01

खभ्युद्गतं प्रस्थितचित्तपादं हैन्या धराया सुनीन्द्रसुमेदम्। चन्द्रस्थिधमीमृतिं लिङ्गितं नमामि संचीपचतुःसीपानम्॥

or

उपजातिः । अभ्युद्गतं हैमभुवो सुनीन्द्रं खर्णादिवत् प्रस्थितचित्तपादम् । धर्माद्वितित्रष्ठसुधांसुवेरुं नमामि संचोपचतुःक्रमञ्च ॥

N.B.—The Tibetan verse, as well as its Sanskrit translation, is an instance of "double meanings," the epithets in the verse being applicable to both Buddha and Sumeru.

ন্ত্ৰী সুনাম ন্ত্ৰী as applied to Buddha signifies "one who has attained the highest purity of heart"; as applied to Sumeru: "producing expansion or exaltation of the heart."

মাইব্ৰস্থানা—1. rising above the earthly or rotatory existence; 2. a golden mass rising high over the earth.

TT-SN-1. the four stages of perfection, viz., srotāpatti, sakrdā-gāmi, ānāgāmi and arhattva; 2. four steps of ascent.

সুস্বস্থান foremost of sages, that is Buddha.

रैन्द्रिप्रिप्र-a fabulous golden mountain in the north (Sumeru).

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### DECEMBER, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 5th December, 1906, at 9-15 p.m.

The Hon'ble Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., Vice-President, in the chair.

The following members were present:-

Dr. N. Annandale, Raja Ram Chandra Bhanj, Mr. F. B. Bradley-Birt, Mr. I. H. Burkill, Mr. R. Burn, Rai Sarat Chandra Das Bahadur, Babu Amulya Charan Ghosh Vidyabhusan, Mr. H. G. Graves, Mr. H. H. Hayden, Mr. D. Hooper, Mr. W. W. Hornell, Dr. W. C. Hossack, Mr. C. Little, Dr. M. M. Masoom, Mr. R. D. Mehta, C.I.E., Capt. W. F. O'Connor, R.A., Lieut.-Col. D. C. Phillott, Major L. Rogers, I.M.S., Pandit Yogesa Chandra Sastri-Sankyaratna-Vedatirtha, Mr. R. R. Simpson, Babu Chandra Narain Singh, Mr. H. E. Stapleton, Mahamahopadhyaya Satis Chandra Vidyabhusana, Mr. E. Vredenburg, Rev. E. C. Woodley.

Visitors:—Mr. E. C. H. Cresswell, Babu P. K. Das, Mr. H. C. Jones, S. Naseer Hosain Khan, Babu Dwijendra Narain Ray, Babu Purnendra Narain Singh, and others.

The minutes of the last meeting were read and confirmed.

Seventy-three presentations were announced.

In accordance with Council order, the General Secretary read the following report submitted by the Delegates to the Aberdeen

University's 400th Anniversary on behalf of the Society.

"Your Delegates to the Aberdeen University on the occasion of its recent Quartercentenary Celebrations have the pleasure to submit a short report of their mission. They do not propose to describe the Festival, as they understand that the official Publications Committee of the University intends to present Books of the proceedings to all the bodies that sent representatives.

The Celebrations, which extended over four days—September 25th-28th—of exquisite weather, were begun by a service in one of the two constituent colleges of the University (King's College) and were ended by an evening Reception in the other (Marischal

College). During the entire week the City was en fête.

In the afternoon of the First Day, the Delegates, upwards of 240 in number, and representing the Universities, Colleges, and chief Learned Societies of the United Kingdom, as well as the principal Universities and Academies of the British Possessions, and those of America, Austro-Hungary, Belgium, Denmark, France, Germany, Holland, Italy, Japan, Norway, Russia, Sweden,

and Switzerland, were received by the Chancellor and great officers of the University and formally presented the addresses of congratulation with which they were entrusted. This was one of the biggest functions of the four days, and was so managed that the whole population of Aberdeen might see something of it; for the members of the University (among them a most charming band of more than a hundred girl undergraduates), together with the special Guests of the University, the Delegates, the Magistrates and the Town Council, all arrayed like King Solomon in all their academic or civic glory, marched in procession through some of the streets of the city to the place appointed for the Delegates' reception. The place of reception was a temporary hall, specially constructed at the charges of the Chancellor, Lord Strathcona, and capable of accommodating 4,000 people. The dais of the hall was occupied by the senior members of the University and the special Guests and Delegates: the body of the hall was filled by the invited public.

The Delegates from the United Kingdom were the first to be received; after them came those from the Colonies and India, and then those from foreign countries in alphabetical order. As the Delegates of each country were announced the whole assembly stood up while a band played the appropriate national anthem

or air.

The addresses were presented to the Chancellor unread: indeed, it would have been impossible to read them, for the mere formality of presenting them engaged the greater part of the afternoon: but a selected delegate of each country or group of countries delivered a short speech in behalf of his colleagues. In this procedure, the delegates from all the British Dominions beyond the seas, India included, were represented by Principal Peterson of the University of Montreal and were attuned to the national air of Canada.

The addresses, however, were afterwards publicly displayed in one of the museums of Marischal College, and were one of the chief attractions of the Reception that brought the celebrations

to an end.

Some of the addresses were real works of art, upon which considerable time, thought, money, and in some cases scholarship, must have been spent. Ours was not, by a long way, one of the most attractive, though it was by no means one of the plainest.

After this great reception, the Delegates were entertained at a banquet given, in one of the public halls of the city, by the

Lord Provost, Magistrates, and Town Council.

In the morning of the SECOND DAY honorary degrees were conferred upon 122 distinguished guests. Among those thus honoured were Sir John Jardine, K.C.I.E., M.P., the delegate from Bombay University, and Mr. John Sime, C.I.E., who represented the Punjab University, as well as on Professor Kielhorn of Göttingen, who is one of our Honorary Members, Major Ronald

Ross, C.B., F R.S., late of the Indian Medical Service, and Professor C. R. Lanman, professor of Sanskrit at Harvard.

In the afternoon of the same day there was a Reception by the University at King's College, and in the evening another pub-

lic Reception at the Art Gallery.

The THERD DAY was the day of the celebrations, when the new buildings at Marischal College were formally opened by the King, who was accompanied by the Queen. The weather was truly imperial, and all the eminence of Scotland—academic, civic, political—and all the adorned beauty of Aberdeen, were present.

In the evening a banquet, almost comparable in magnitude with the feeding of the multitude in the wilderness—for the number of the guests amounted to 2,400—was given by the Chancellor, Lord Strathcona, to all the graduates, guests, and delegates. Many of the guests were their academic robes; nor did any one lack anything of the equal feast.

The principal function of the FOURTH DAY was the evening Reception at Marischal College, at which upwards of 4,000 guests were present, and doctors' robes of many colours were displayed to soft Lydian airs and the powerful strains of the national instru-

ment of Scotland.

Your Delegates came away with vivid impressions of the wonderfully perfect management of the long series of ceremonies, and of the splendid hospitality shown to all the guests and delegates both by the University and by the city."

A. ALCOCK.

18th October, 1906.

GEORGE A. GRIERSON.

The Chairman announced that Dr. E. D. Ross having returned to Calcutta had taken over charge of the duties of Philological Secretary from Mahamahopadhyaya Haraprasad Sastri.

Lieut. J. C. More, 51st Sikhs, F.F., Bannu, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N. Annandale; Mr. R. J. Hirst, Assistant Superintendent, Bengal Police, Calcutta, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N Annandale; Captain S. Morton, 24th Punjabis, Dilkusha, Lucknow, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N. Annandale; Diwan Tek Chand, B.A., M.R.A.S., I.C.S., Deputy Commissioner, Ludhiana, proposed by Lieut-Col. D. C. Phillott, seconded by Dr. N. Annandale; Mr. H. C. Norman, Professor of English, Queen's College, Benares, proposed by Lieut.-Col. D. C. Phillott, seconded by Mr. H. E. Stapleton; Mr. Henry Sharp, Director of Public Instruction, Eastern Bengal and Assam, Shillong, proposed by Mr. H. E. Stapleton, seconded by Lieut.-Col. D. C. Phillott; Mr. G. R. Kaye, Bureau Assistant to the Director-General of Education, Simla, proposed by Dr. E. D. Ross, seconded by Mr. R. Burn; Captain C. L. Peart, 106th Hazara Pioneers, Quetta, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N. Annan-

dale; Captain Claude B. Stokes, 3rd Skinner's Horse, Deolali, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N. Annandale; Leiut. G. Harris, 56th Infantry, F.F., proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. Annandale; Major F. O'Kinealy, I.M.S., Civil Surgeon, Darjeeling, proposed by Major L. Rogers, I.M.S., seconded by Major F. P. Maynard, I.M.S; Mr. Arthur William Dentith, I.C.S., Assistant Comptroller, India Treasuries, proposed by Lieut-Col. D. C. Phillott, seconded by Dr. N. Annandale; Major W. Donnan, I.A., Examiner, Ordnance and Factory Accounts, Calcutta, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N. Annandale; Mr. J. C. Jack, I.C.S., Joint Magistrate, Backergunge, proposed by Mr. H. E. Stapleton, seconded by Lieut-Col. D. C. Phillott; Dr. Adrian Caddy, M.D., M.B., B.S. (London), F.R.C.S. (Eng.), M.R.C.S. (Eng.), L.R.C.P. (Lond.), D.P.H., Calcutta, proposed by Major L. Rogers, I.M.S., seconded by Dr. Arnold Caddy; Dr. H. Finck, M.D., Surgeon to the Consulate-General for Germany, proposed by Major L. Rogers, I.M.S., seconded by Major F. P. Maynard, I.M.S.; Professor S. C. Mahalanabis, proposed by Mr. J. A. Cunningham, seconded by Dr. N. Annandale; Major B. H. Deare, D.P.H., I.M.S., Civil Surgeon, Patna, proposed by Major L. Rogers, I.M.S., seconded by Major W. J. Buchanan, I.M.S.; Captain H. B. Foster, I.M.S., Eden Hospital, Calcutta, proposed by Major L. Rogers, I.M.S., seconded by Captain J. W. Megaw, I.M.S.; Captain J. C. Holditch Leicester, M.D., F.R C.S., M.R.C.P., I.M S., General Hospital, Calcutta, proposed by Major L. Rogers, I.M.S., seconded by Captain J. G. Murray, I.M.S.; Major W. J. Hayward, M.B., I.M.S., Police Surgeon, Calcutta, proposed by Major L. Rogers, I.M.S., seconded by Dr. W. C. Hossack; Captain Harvey, R.A.M.C., Station Hospital, Calcutta, proposed by Major L. Rogers, seconded by Major F. P. Maynard, I.M.S.; and Captain C. C. R. Murphy, The Suffolk Regiment, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N. Annandale; were balloted for as Ordinary Members.

Mr. D. Hooper exhibited some primitive candles made from the seeds of Myristica canarica, one of the wild nutmegs of Southern India. The tree is found in South Kanara, Malabar and Travancore. The seeds, which contain half their weight of fat, are beaten into a paste and pressed into the hollows of small bamboo stems, and then heated over a fire. The black candles, moulded in this peculiar fashion, are removed and used for illuminating purposes by villagers. The fat of the seeds consists mainly of myristicin, is readily saponifiable, and warrants a wider commercial application.

On behalf of Mr. J. W. Ryan, Manager of the Government Rubber Plantations at Mergui, the Natural History Secretary exhibited a photograph of a prostrate but vigorously growing tree of Hevea brasiliensis, the Para rubber tree. The purpose of the exhibit was to illustrate the vitality of this species.

The following papers were read:—

1. A list of 124 new words, chiefly European, that constantly occur in modern Persian Newspapers; collected from the newspapers of the past six months.—By Muhammad Kazim Shirazi, Persian Instructor to the Board of Examiners. Communicated by Lt.-Col. D. C. PHILLOTT.

This paper will be published in a subsequent number of the

- 2. Salima Sultan Begam.—By H. Beveridge.
- 3. The Paladins of the Kesar Saga. A collection of Sagas from Lower Ladakh Tale No. III.—By REV. A. H. FRANCKE.

. This paper will be published in a subsequent number of the Journal.

- Note on the Common Kestril (Tinnunculus alaudarius).—By LT.-COL. D. C. PHILLOTT.
- 5. Note on the Lager Falcon (Falco jugger).—By Lr.-Col. D. C. PHILLOTT.
- 6. A note on Swertia tongluensis and on a new variety of Swertia purpurascens.—By I. H. Burkill.

These papers will be published in a subsequent number of the Journal.

- 7. A Chapter on Hunting Dogs, being an extract from the Kitābu'l-Bazyarah, a treatise on Falconry, by Ibn Kushājim, an Arab writer of the Tenth Century.—By LT.-Col. D. C. PHILLOTT and MR. R. F. Azoo.
- 8. Note on a specimen of Felis tristis, Milne-Edwards, in the Indian Museum.—By N. Annandale.
- 9. Notes on Indian Mathematics.—By G. R. KAYE. Communicated by Dr. E. D. Ross.

These papers will be published in a subsequent number of the Journal.

- 10. Miniature Tank Worship in Bengal.—Compiled by A. N. MOBERLY, I.C.S., Superintendent of Ethnography, Bengal. Communicated by the Anthropological Secretary.
- 11. The Saorias of the Rajmahal Hills.—By R. BAINBRIDGE. Communicated by the Anthropoligical Secretary.

This paper will be published in the Memoirs.

- 12. Notes on the Freshwater Fauna of India, No. XI. The Occurrence of the Medusa, Irene ceylonensis, in Brackish Pools, together with its Hydroid stage.—By N. Annandale.
- 13. Notes on the Freshwater Fauna of India, No. XII. A Preliminary note on the Polyzoa occurring in Indian Fresh and Brackish Pools, with the description of a new Lophopus.—By N. Annandale.

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14. Notices of Orissa in the Early Records of Tibet.—By RAI SARAT CHANDRA DAS, BAHADUR.

These papers will be published in a subsequent number of the Journal.

The Second Meeting of the Medical Section of the Society was held on Wednesday, the 14th November, 1906, at 9-15 P.M.

MAJOR W. J. BUCHANAN, I.M.S., in the chair.

The following members were present:-

Major E. H. Brown, I.M.S., Dr. A. Caddy, Captain F. P. Connor, I.M.S., Lt.-Col. F. J. Drury, I.M.S., Dr. W. C. Hossack, Dr. W. W. Kennedy, Captain D. McCay, I.M.S., Captain J. W. D. Megaw, I.M.S., Major D. M. Moir, I.M.S., Major J. Mulvany, I.M.S., Captain J. G. P. Murray, I.M.S., Captain J. J. Urwin, I.M.S., and Major F. P. Maynard, I.M.S., Honorary Secretary.

Visitors:—Capt. J. A. Black, Dr. Adrian Caddy, Capt. Harvey, R.A.M.C., Capt. J. C. H. Leicester, Major F. O'Kinealy, I.M.S., and Dr. J. B. Phillippe.

The minutes of the last meeting were read and confirmed.

Major D. M. Moir showed some clinical cases.

Captain J. W. D. Megaw read a paper on "A Year's Experience of Malaria at the Medical College Out-patient Dispensary."

Major L. Rogers showed some lantern slides illustrating the short fevers of Calcutta.

The discussion on the last paper to be continued at the next meeting.

With a vote of thanks to the chair the meeting terminated.

60. The Paladins of the Kesar Saga. A Collection of Sagas from Lower Ladakh.—By A. H. Francke.

#### PREFACE.

The following tales, which I call "Sagas of the Paladins of the Kesar-saga" were dictated slowly by the same man who dictated the "Lower Ladakhi Version of the Kesar-saga," and were written down by the Munshi of Khalatse, Yeshes rig 'adzin. The sagas contained in the present collection are not considered by the people to be of the same importance as the Kesar-saga proper; but they are interesting enough to the European student of Tibetan folklore as throwing new light on the Kesar-saga. According to my conception, the present sagas constitute parallels to the Kesar-saga, as were told in side-valleys. Some of the Agus appearing in them look exactly like Kesar himself under a new name. When these tales were united with the principal saga, Kesar under a different name (i.e., the Agu) had to become a son or servant of Kesar under his own name. In the first of the tales, however, we find Kesar under his own name, and the tale reminds us in many parts decidedly of Kesar-saga, Tale No. V, Kesar's defeat of the giant of the North.

#### TALE No. I.

THE TALE OF KESAR'S BELOVED MON.

### Abstract of Contents.

Kesar had a Mon (low-caste man) whom he loved more than anybody else. The Agus became jealous and killed the Mon on the occasion of a hunting party which they had undertaken in his company, by pushing him from a high rock. Kesar went to find him and heard a voice speaking out of his corpse. Therefore he opened the Mon's belly with a knife, and out of the corpse came two Mons, a male and a female one which he carried home in his loin cloth. Both were some sort of devils who required a great amount of food. At first the Agus had to feed them, but when their supplies were finished, the Mon-devils were entrusted to grandfather rTse dgu. This old hermit gave them much work and little food. Once they found a lump of gold and a turquoise of the size of a hearth-stone. These treasures they presented to the hermit, asking him to increase their food and give them less work. He, however, did the opposite, as he was of opinion that they would find him more treasures if he was hard on them. Then the two devils fled to a poisonous lake in which they bathed, with the result that their appearance became perfectly diabolic. One of their teeth grew down to the earth and another up to the sky, and they received locks of blood-red colour. They attacked

the hermit in his house, but Kesar was sent to rescue him. When they had told their tale to Kesar, the latter advised them erroneously to go to the land of the Nagas and devour its inhabitants. This was a slip of the tongue, for he had intended to send them to the land of the devil. When the misery of the Nagas became very great, they were advised by their sorcerers to send two of their ladies, Dargyi yang mdzesma, and Dargyi mthong mdzesma, to Kesar, to ask him to come to their assistance. These two Nagini went towards the land of gLing and put up 100 black and 100 white tents. First of all, Agu Khrai mgo khrai thung was sent The ladies took the shape of bears, and the Agu against them. ran away before them, wounding his horse with his own sword in his fright. Then Agu dPalle was sent, but he also fled before the bears. Still he found out that they were females. Therefore he gave the advice that a'Bruguma ought to be sent to the tents. She was well accepted and asked by the Nagini to send King Kesar to them for some time. Kesar agreed to that, saying that 'aBruyuma would probably repent her promise. Then 'aBruguma was ordered to fetch Kesar's horse from the cold (or straight) valley. But the horse behaved awkwardly and would not come. By throwing a stone at it with a sling, she succeeded after all in mounting But then the horse went off in the most extraordinary way, carrying her up to the sky, and then dragging her along mountain ridges, 'a Bruguma spending most of the time below the belly of the horse, with the result that, when they arrived after all in the stable, the back of the horse was sore. Then 'aBruquma went to her father and mother, angry. Kesar healed the horse with the medicines which were always ready for use in the horse's ear, and took 'a Bruguma back to the castle. There she had to clean all the harnesses and other armature which Kesar intended to take along with him on his expedition. Then 'a Bruguma sang a song in which Kesar is praised as a being from whom light, dew, and flowers proceed. Kesar answered with a song in which he said that, although leaving as a young man, he would return as an old man. Kesar was led by a fox to the land of the Nagas. He punished the two Mon-devils and sent them to the land of the devil to eat there all the poisonous snakes. Then he played at dice with the brother of the two Nagini, Yang maze ma and mThony mdzesma. Thus nine years elapsed. But then the Naga had a difference with Kesar and called him, "Forgetter of gLing." That very night Kesar saw his horse in his dream. He went to look after him the next day and found him after a long time. The horse advised him not to accept the food which was to be offered to him by the Nagini, as it was poisonous, and they rode off in the direction of gLing. Two days before arriving there, Kesar took the shape of a wolf, and soon met with Agu dPalle who had taken the shape of a sheep. But the latter recognized Kesar and blamed him for not hurrying home, as  $bK\bar{a}$  blon ldanpa

<sup>1</sup> There is a very similar passage to this in Kesar-saga, Tale No. V, Kesar's victory over the giant of the North, Bibliotheca Indica.

had taken possession of the castle of gLing and 'aBruguma, and killed Agu mDa dpon gongma. Therefore Kesar took the shape of a begging monk and went to the gLing castle to ask alms. He told 'aBruguma that he had heard news of Kesar's death in the land of the Någas. 'aBruguma liked that news and gave him a little room to sleep in. At night Kesar surprised 'aBruguma in the company of  $bK\bar{a}$  blon ldanpa. The latter was suspended in a cage, but released when he made over his property to Kesar. Also 'aBruguma was forgiven and re-accepted.

VOCABULARY OF THE NEW WORDS AND NAMES.

কাব কিছিল man thead or ma theadde, 'the measure not being full'; 'not enough with this.'

khongsu, or khokungyi su, one among them.

lboste, blown up, filled with air or gases.

nambag, the upper part of the coat, above the girdle, which is used as a pocket.

স্থা bragste, perfect tense of modern 'abregpa, 'cut off' (the limbs of killed animals).

मा मा grokoro, dumplings.

মুস্ত্র | skumcas, take off, diminish.

হাত সুমা skyedcas, make more, increase.

ব্দিনী প্রমে। drangqi lungpa, instead of grangqi lungpa, means 'straight valley.'

あず」 chaso, long tooth.

kha norla, making a mistake in his speech, a slip of the tongue.

ম্দ্রের্না sang sang tha 'abrog, name of an outlying field.

 $\widetilde{\mathfrak{A}}$  | zho, not only  $\frac{2}{3}$  Rupees as is stated in the dictionaries, but 12 annas  $\times$  6, or  $4\frac{1}{2}$  Rupees.

हाँ में rtsva gor, ear of grass.

সুঁনাত্তমা snyogcas, trample down (of grass).

্বিপ্রসূত্র | kha shul btangcas, rinse the mouth.

54 7 drenmo, the same as dredmo, female bear.

भुना र्नार | ltag dkar, white neck, of animals.

ZE phong, the same as phabong, rock.

মেশ্বেম্প্রতিষ্ঠা khar khar btangces, sharpen (a knife, sword).

হান্ট্ৰা sdugpo, unhappy.

ৰিম'ৰ্মা | zhimzag, sweet-meat.

নিমান shilang, dung.

ಹಸ್ । charma, a small stone which is broken from a rock.

ট্রেন্ডম। khyelcas, mount a horse.

ইম্নির | lbo yogla, underneath a horse, on its stomach.

جَمْر اللهِ المِلمُّذِي المِلمُولِيِّ اللهِ اللهِ المِلمُّ اللهِ اللهِ اللهِ

พมาริรัฐผู | ambiti phrulu, name of a fruit.

grap zhurle, the dress of the horse from saddle to tail.

স্ক্র্রা ban 'adum, said to mean 'silk.'

בוק padka, the same as padma, lotus-flower.

Mari leather boots.

ই নের্মান্ত 'abrangeas, 'the heart is following,' to become excited.

क्रान्डर | rnam tsar, respectful for tsadar, loin-cloth, girdle.

33 nyi rtse, 'sun-summit,' the lustre of icy peaks.

ম্মানী sgara sgure, very old.

SICK | sgang ra, beard, ra stands for skra.

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[N.S.]

र्मा इंदेन केन्। rtsug rna rinchen, name of a Naga.

সামান্ত্রমা ysang rabs, food given to monks.

ক্রমান্ত্র | charla btangcas, hang up, suspend.

মান্ত্র বিষয় sems 'adriste ('adriste stands probably for 'abriste), conciliated.

 $\begin{bmatrix} 55 \end{bmatrix} \stackrel{ngatang}{=}$ 

Of the two words for 'we,' ngatang is used inclusive, and ngazha exclusive of the addressed person.

# ।। गोसरमी सेंद्रमा देश सदे सुद्रा प्येद ।।

र्भेन् हुंमार्भे । न्रीट मुक्ष क्षेत्र मे अर त्य भेन महिश्र य हिमार्भेन र्दम्। गोस्यरमीयारे स्वर्या र्द्धास्य सार रेव उव पर्दे है। सर्भासनी सर्वे र र र र हुना यस । अस अर हिस वे या यह स्था लट. सुर्वाश हो. सूर्वश रा.शट। शव. क्र्री मैपा हा. प्रि. ट्रा. हा. हा. हा. हा. स्वरियं स्थापस्य विविध्यम् यास्त्रीत्यविष्यविष्यविष्यं र्वता रयर वृष्ट्रायाया हुँ ल्या है मीयश विवाय हुँ है हर था टारेट र्मत्यं कंट सदी सम्बियाविया सेंद्र रेम्बर प्रेनेर देने रेनेर द्वा। विकार न्द्रमीक्षाक्षानिक्ष्मिक्षानिक्षा प्राप्तिक्षानिक्षा प्राप्तिक्ष <u> बिनाय प्रेटशय हिर प्रेरा ने देश स्नाय स्रेर में बिना नी सर्ने दश स्र</u> वायद्यायत्रप्रेयचेरावयाविदायात्रस्याक्षा नेवसान्ययाचे कंदा मरागोसरमुवार्यायावस्य। मुवार्याये। दालकदासार्वेनया पर्नरस्थात्नुम्। ३ रममी स्वामित्रस्याम् १ त्रास्यक्रमार्ये स्वा न्येंन्याः सूर्य। दाला क्रांस्यायो केन्या सेन्या मा स्यामीस

कुताचेर ने स्व मारेश या भेरश न स्व मरे है। न्यत में गुव न मनुमार्चा ने विकान्यतः वीति माना श्रॅट्से। देशसमामर्थिन से लिमास्पर्कमाया स्वामकेशयदेशस है। देवे समावश्चर प्रायम्बर्ग महत्या देवस मिट कंट सासीर लिनाकुन्त्रीट आयर र्नुकुल र्या से दे र उर्द्धिय र्या विल यें अर्थे र चित्रस्याम् स्ट्राचेरस्याम् सिंद्रस्या देन्द्रम्या देन्द्रम्या कुमासार के श्राप्त इस्स । सिसार्ज्य पार्श्वा होसा श्री श्री ही हो स लूट.इर.इरश हिट.मी.मि.स.पंक्रशताश्चर विषाता.मी.शर.मीश. यश्रम। ५२.भु.भव.मी.पि.भ.५७भग्न। प्रि.यश्चरभाष्यः स्पेष्टे स् नममाने। मुलाराणिसर रे.पान्नायारा ने.रे.मर्चेन रा.पे.स. त्यन्त्रीयाय। ह्रान्निकायाने द्वानिकाने ने हे प्रिन् ह्वाया मूर्य, तप्र, वर वश्च भर द्वान प्रदेश होना स्त्र क्ष्म स्त्र ने वा गी. श्वर मीश्वर दरे अंद मार्डेश या पर्नेर के ब्रॉट । र मिं दे कं यश की मा पर्ने में र सदे वटावसायेटा क्रीमा बेरा है। में मुं स्वार्शसाय स्वार्थ नर्टस्य । मूर्नियं वर्षियं स्था स्थित स्थित स्थित मिट्टेश मिटिश स्थित गुन्धर वर् मुक् बुना। मुक्क गावस नमावट र् प्रिंट हे समिर त नश्चेतः स्। देनावृक्षणान्तर्तः रेज्यक्षणान्यः। नावृक्षणायः विकार् भ्र.चीत्राश्रीपर्न.र.ज.पर्वीर.श्र्रावेश । ध्रीटाश्रीटरानी.चरानी.चरानी. मिट्नीश कें र्वत निवस मीट यदे प्रयाप में र्वत सामा मिट्नी सामा मिट निर्मार्थितः। रेत्रे हित्वसार्ययः विर्मातायाः सामानायाः मुर्केटा विट्नीशम्मनश्यक्षी अभिन्नियन्विक्तिन्त्र

यायातिहर्याचीयाचेराहे। अभित्रस्याहिरस्य। अभिस्यादरिःह्या मुर्थ-य-जालेबीचीकुची-ज-र-भाचची-चेची-की स्र-वर्मे वर्म प्रवित्ति । स्राप्ति प्रमानिक प्रमानिक प्रमानिक स्राप्ति । यानर्भेश। इन्द्रिःकेशयान्तें में रामनुः नर्देश। स्वारीटायालमाः ऱ्.प्र। अन्। तम् प्रमार्थे प्रमार्थे प्रमार्थे प्रमाप्त स्मार्थे । **७**.४. र्गार वर्गु ५ हिंद वर्षम् । रे डिमायस पर्द है। म्राम् र्रायम् प्रदार देश पर्देश है प्रसा रे वहालमा देनाया होत रात्रान्द्रदे विदार्क्षर हे मुश्चेर श्वमानी समेरित्रस हेना विदार्ज । सेद्र श्वेद मार्नेमार्से दे हु हर देर ने मिश्चिर होमार्स हिमार्सेस श्रीता श्रीता श्रीता श्रीता श्रीता श्रीता श्रीता श्रीता वेरकाय। दर्भमक्षेरप्रामध्येदे केंग्यु रे यहेंद्र व। दान्द्र विर मीलाला लिया हुंचा लेका हुंचा हो स्वार्शिता ह यश्चन्द्रम् भुत्र। अचन्द्रभुत्तेन्त्रभुत्रभुत्रभ्रम् विद्रमाष्ट्रभ मीयत्रक्षम् स्त्रा देवसाम्ह्निमानाश्चरतिमानाम् वसार्टानास्त्रे ૹૻૼૼૼૼૺૺૡૢૻૡઌૢ૿ૼૹઌૻૻૄૡૣૼઽઽૢ૽ૺૹ૽ૺૹ૽ૺઌૡૢ૿ૡૢ૿ઌઌ૿૽ૢૺૹૢૣૻ૽ૢૡ૽૾ઌૻૡઽ૾ૺૡૢ૱

के अदि त्यका यन्द्र हो सुराय देगा सहंद वि । कें सदे :ब: यर्ट : कें क्वेर :य: रेमा सर्दर वि

ने हमा लुकाय। शे से ह्यूय निर्देश मीका यक्षा विदाय के स्वरी पश्चित्व। मोश्रर्द्राम्युःसरः स्ति हिर्णेष्र्वित्रसम् हे सैयशा जरायर हे हैरिरे यर शहा रे वशहर स्वार्थ श्रीटमिक्षामातार्श्वाभेटार्शे। यहामीतिहाराष्ट्रासीतार्वेरहेर्श्वाम। देन्द्रम्मानी सर्वे विमार्थिद र्ह्नम्य । विद्रादेन सर्वे दे बदार विमार्था । मिट्मिक्रिया तास्मामी रतारा हुया कर्शे मिठमा महस्राय सेटा क.श्र.मोठुमा.श.ल.डिमा.हो। स्र.भ्र.ड्रॉच.२ग्र्य.ड्र.२मी.च.कुथ.ड्र-८मी.थ. विनार्धेदशक्षी असेपार्विदार्धेदार्डेशानेशाही हार्झेन्गु देस पद्मान्ध्रे। स्रेसेम्रिट्यायाध्यार्थेय्र्यास्त्री देवसम्प्रिसेस् क्षियानक्षेताचे। क्षेपन्तरे रेपडनाचे। क्षेपार्रेश स्थारी रेपी स्म.बु.चर्चेर.रशवःतासीश्र.जासत्त्रः है। ग्री.शर.जा.चर.चाराश्रा.। गु. शर. र्जंश र्जंश क्रां क्रां श्रां श्रा नग्र-द्रम्भःमुत्रास्याने सर्भःस्य विनानद्रस्य स्

> सिबंदश.क्ये.यु.बंदश.श्रुटे.ग्री.शर.रेट्रश.सा.व्रेये। स.मूंश.क्ष.वृ.मूंश.स्रेर.मुल.मू.मार्श्या हिन'गुै'बेंब'य'न्ट बेंब'बेंद मीश बे'बे'ब'कुनायें। ब्रॅब्र य ब्रेंब्र श्रेट मीश श्लेंच द्वेंब्र हे द्वा = इना ब्रें। श्चित्तिमाश्च है झे हि शत्वीर लू। न्यानु मार्शि से स्वि नु से त्युर से ।

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हिन् सर्गुनिसाया सेट से निंदा यनु न स्थ्राया सेट से । हिन्सर्गुनिसाया सेट से निंदा यनु न स्थ्राया सेट से ।

रे हिमा हेर स्परा । में सर सका सप्तुमसमा लटालावेशिव श्रीशासायाः। ग्रीश्रम मुला सं मिट मूर् रिनेस सामा स सन्। दे म्या दे माना निष्या सम्मार स्था सम् श्रृयः ता. देटः श्रृयं श्रीटः मार्रेशामा था दे. ता. बुची स्त्राटः दुशासूबेटा हो जेरसा । सिस्येन स्रीतः । ध्यानशाहारा विना धिता तर्मा । हिन त्यात हरा हे से सि केन बेर है। बे बे बेर है न हे इ बेर वा इस है में अर केन यहा ग्रीसर त्यांत्रिं अर्थेट हे पहिना पहिना रेमा श्रीट हे बेरसा स स्वता स्वता श्रीटमिन्नेश्वामा हिं रटमिन्नेशमारशम्बार्शसा राष्ट्राटा अन्तरास्त्राची तर्नामा सम्बन्धान्यस्य सम्बन्धान्यस्य । द्राक्षान्यस्य स्वना बेरबाय। विद्यानिकानाबानी बराया सुनास्या हे लुबाय। दाराया रेदे विरक्ष है। मुश्रेर शुनासमें इस हैंया मूनाये दे क रूर है मिलिप्र-क्रूमा-यु-बिमा-सून-प्रो र-माक्षेश्रागा-पिन-रे। स्राप्ता-बि-स्रीमा <u> बुनानन्दराय। ८.७.ज.चन्टः श्च</u>ेर। जरानन्दः श्चेमः बुराय। में मेश अन्तर्रा के सुम्रमा असायहरा हे से दे पर्वा दे देश है *७*.ज.ड्रॅ.जूट.ङ्रे.ट्ट.च्रे.जट.पट्ट.यूट.च । ट्रे.ट.जर्ड्.ढुचापट्चा। नेसर्वे देवरनुष्वाशय। रावरिने ह्या ह्येन संहातुशय। नेवश गो.शर.मीश.पर्टे.ली.ज.चरट.कुश.लूब.च। वि.क्र.ज.लूट.हु। वि.ब. म्रास्थ्रियात्राक्षेद्राचित्रा बेर ने द। इ खुनारे नन्द हे द यु खुरायान नन्द हो । गो सर होर

ज्याको। जुभ-जुभ-भ्राक्रिय-स्राप-रा-ज्यात्य। स्व-दा-स्व-श्रीट-पर्विशः अः चेत्रिनात्त्रासा सुदेःचकुत्त्रक्त्त्वात्त्राः वेत्रास्याः व्यास्याः स्वास्याः स्वत्याः स्वास्याः स न्यवसम्बद्धाः । ८.२८.ची.सीम.प.ची.चट्रे.व८.ट्रे.सब.व.स.चीबसाय। भ्रायमुन् कर देशाय मुना र्सेटा। हार्य मुनि प्रेरि में कर है। से या देशया यर्षेश्वश्चाद्धशः भ्रेम्बाराय। भ्रत्यात्वा म्रीटाग्रीयर मीता मृष्ट्रम् । मृष्ट्रियाम्भवाक्षेत्रम् अवरायक्षेत्रम् स्त्रम् इरका ट्रेक्समुलार्गाणीसरायार्ग्यसायाश्चारेक्चरसाय। मिंद्रामी मीयश्चर रे.पी. सुर्र मी.लर. अहूश श्चर । रेट.मी. अहूर अहूश स. माक्रीसामा मान्य द्वार मान्य स्थान स्यान स्थान स्यान स्थान स ब्रिन् नार्केश गा. या स्वास्तर ख्रीन स्थाय स्रीन् हत या या यहार स्वीत होने हिंद म्बेश्याम् मुद्रास्य । देवश्यम् मुद्राम् मुश्यामा मुद्रास्य । क्षेत्रामी स्टान्ते स्टान्स स् न्मी। नीर्यमानमी अस्तर है तर्निकारका। रेजिमी क्रेर छेकारे में अर अर्द्धर है। अन् मुस्ति समें सिदे सूर स्राधा यह स्था आसी सिनै विराने दे नहीं ना के सी बिचा नरे रहा है।

> हिन्नान्नित्त्वार्ययायाय्यात्र्वित्तः हिन्नाय्येव। हिन्नान्नित्वाययायाय्यायाय्यः देश्वाविनाय्येवः वि। हिन्नान्नित्वाययायाय्यः विष्णाय्येवः वि। इन्नित्त्वाययायाय्यः विष्णाय्येवः वि। इन्नित्त्रेष्ट्राय्येवः विष्णाय्येवः वि। इन्नित्त्रेष्ट्राय्येवः विष्णाय्येवः वि।

देश्वाद्धात्रादेश्वाद्धात्रम् विमार्थेद्वा ।
देश्वाद्धात्रम् विद्यायाः स्थ्येत् ।
देश्वाद्धात्रम् विद्यायाः स्थ्येत् ।
देश्वाद्धात्रम् स्थ्येत् ।
देश्वाद्धात्रस्य स्थ्येत् ।

ते स्वा से स्वा विश्व के स्वा के स्व के स्व

सःमुरःदगर्वः स्प्रिः स्रामकः दिर्शः सः केता । सःमुरः दमा दरः स्प्रिः स्रामकः सदमा सः माश्रकः सः । सःमुरः दमा दरः स्प्रिः स्रामकः स्रामकः सः सः सः सः सः सः

अट देव से मिहिसाय हु से पदि दे दे हिंदियाय। द्याय ये सेंदर अमा क्षेमा या प्रेमा प्रमाय बिंद विना के बेंदि। विना के का जाता निर्मा के बिंद से कि भूथ.य.चुंश.टे.म्रीट.श्राच्य.रे.सूट.हो। चीज.त्य.पी.स्ट.ज.बिश.ता रेडिः ॲरशम्बन्धिः भेगाबन्धः अस्ति अवस्त्रेश्चरत्वा। हे हे दिनुम्यासः स्यायन्द्रम् कुषाय्येन नेराने। हे हे ने निर्देशय। मिटायाहे हे त्रु न् अप्टि केश अवेट खे। येन दान के ति हैं ति हैं थिंदशा देवशहें हे सिद्वित्वशम्नुर वट दुष्टिर दे अर्मेव महर मीव विमा विनानर्व त्रमास्य हो। देवसाम्य ने साम्र मा हे हे से। मुल यानिसरापर्दरास्त्रीयास्त्रमायन्द्रात्रास्त्राह्यास्त्राह्यास्त्राह्यास्त्राह्यास्त्राह्यास्त्राह्यास्त्राह्यास् कर्यार्डे । श्रुर त्रामा श्रे सामर र् जिट श्रे मुल रा में सर त लुस य। मुलार्याये। नेम्रान्यारम्युरावनाः भ्रुवास्यान्ते नेस्युः सेरि सेर्विना या के र र भाषाता अहंका अप्रार्थ अहंदा अहंका अप्रार्थ के विष् श्चर हमा श्चिर रम्प्रियर् ना ये जेरसा । यो सर मीस पर्देश या। हेर हेर रतम्बिशत्यत्रात्रहेश्यवहेश्याय्येष्यत्रहेरशय। हि हेश्राहेरश। दशः यद्रमुद्दान्त्रिम् स्त्रिम् स यते वटानु हे हे नटा क्रिन् केन्या हे हे निर्मा सारा यदे वटानु खेटा है। रे.अर्केंद्रेर्ग् विनानीमियानेट है। यु उत्यस्त्रु विनाय प्रस्

कुत्रां में स्ट्रान्स्य स्ट्रिन्स्य में स्ट्रान्स्य स्ट्रिन्स्य स

ब्रुत्रात्ययः द्वे क्रुन् ने क्रिंग् क्रुन् ने क्रिंग क्रिंग क्रुन् ने क्रुन् ने क्रुन् ने क्रिंग क्रुन् ने क्रिंग क्रुन् ने क्रुन ने क्रुन् ने क्रुन

नार्मात्मम् स्वास्त्रा व्राह्मम् व्याप्तान् स्वास्त्रा स्वास्त्रा व्याप्तान् स्वास्त्रा व्याप्तान्य स्वास्त्रा स्वास्त्रा स्वास्त्रा स्वास्त्रा स्वास्त्रा स्वास्त्रा स्वास्त्रा स्वास्त्रा स्वास्त्रा स्वास्त्र स्वास्त्

<u> १.डमा डेर मीय हमा मार्था र जा के हैं र विमान र सारा।</u> देनाभश्चर्ताः में कराम हिना शुद्धि सम्ब्रेना ता सेना । शुद्ध श्वेश्वरा रेवशर्वे निष्ये । यहमे हैं यय है स्राह्मे हु हु हु सर्वत्रायश्चेत्रय। हे हेशचेरशय। झर्रामा निर्मा स्ययसन्दर्भवा स्थान स्था ट.रट.यट. विकाश्राट. विवा बेर हे. वासक्रेट्स या वा वी विवे प्राप्त स्थित वा श्रूटः। बेंद्रिःमःश्रूल्टःहै। वश्रःश्रमदःमःमिरःदेष्टिरश्रःच। हे हे मुर्जिमात्मन बुनाय। सामान्य भेर होन्स हो सामान्य सामा नापस ता द्वेयासाया पुर । नापसा रे भावव प्यत्राप्त होर हे माध्यसारे भा ब्रिट्रा मिल्यम्ब्रे द्वास्यास्य स्ट्रा दे ख्यास द्वास्य द्वासा र्रे.श्र.मंभ्रत्यपुटःहै। वीजायाक्ष्टाभ्रायाक्षायार्वेष्वशा श्रीटाश्रायरः रुपश्चेय स्ट्रा रेज्र रुप्ते श्रेसाया यह मा द्वेषा है है स्प्या यह दय निराधियाः हिंदा से ति सर सुरा है ही पर है पर पीश हो। मीरिया पारशा श्रेक्षित्वा श्रुप्त अभूतः हिना प्रदेश स्था में अर भार्त्य स्था भूत स्था में अर भूत स्था में

भन्न-वर्त-पः निर्मा श्रीया मित्र मित्र मित्र प्राप्त के मित्र मित्र प्राप्त किया मित्र प्राप्त के मित्र मित्र मित्र प्राप्त किया मित्र के मित्र मित्र

र्शे । रेक्स हे हे ब्रीट अवर रुपश्चेत से तर्ग सप्त जो सर मुस हे हे अब्रु क्षेत्र प्रदेश से अ

द्ये हें हें अर्देश के कुंद दें ।

हें हें त्यु मा अश्चर्यमा के मा अश्वर दें ।

हें हें त्यु मा अश्चर प्रमा के मा अश्वर दें ।

हें त्य के त्ये के कि महिला के हुं मा दें मा यहें हैं कि ।

हें त्य के ते अही के कि महिला दें मा अहें के कि महिला के हैं मा कि मा यहें हैं कि ।

हं कुंद के दें कि सही के कि महिला है मा कि मा

स्तरान्द्रसम् से दे उ से द ले । क्षे ता येट हे तक महाक्षर रेम ह्या ते। सर्कें से दे सम्भाव कर हुमारेमा रेट से । द्वर्वरवर से दे नाहार वृत्ता रेना र्ना वे र्ने में मर्दाल्य भे से स्थार में क्षेत्राचेद्र के यन महास हुमाये। मर्जे में दे सम्रोत न कु ह्यूना देना देंद्र ते । र्वन्तर्भरमें दे माश्रद्धमार्थे। भ्रीतरमाद्यमान् समाञ्चार प्राप्त र्श्वेत्र स्ट्रेस्य महास देमा सुमार्थे । सर्के के दे सरीय व कु हुमा रेमा देंद्र के । र्वन्त्रम्भरः ये विमायाः शुमा उमानुमार्थे।

मिविष्ठ,मिवि, दूर ही. ज. हार जूर म्. य. मूट में प्रयम् श्रुम हूँ मा प्रा मर्कें में दे मध्यान कु हुमारेगा नेंद्र में। व्यत्यत्यत्यः द्वे दे नायाः श्वार्मा ह्या ते । समास्यामी रचि ले झे साम्रेट से । म् वायित हे यन मासुस रेना सुमार्थे। सकू सूर् दे सहजा के कि मी हमा हूट हों र्वन:न्त्रन्त्रमः दे दे नाहाटः श्वाः हेवाः हेवाः हेवाः नवत्तुमः उत्रः क्षेत्रः क्षेत्रः वि मित्रायित्र के त्यन महित्र देना हुना ते। सर्वे से दे सरीय व क सून रेना रेट से । र्वन देव देश र राष्ट्र माश्रद त्या रेवा हैवा ले । सर्गादे स्ट्वी रनाश से लायेट लें। म् ता येट हे त्यन हु महाम रेगा हुना ते। सर्वे से दे सम्पान सुमारे मार्ने स्था र्वन न्तर्म र ये दे महाट शुना रेना हुना थे। में श्राप्ति प्रमाञ्चा भाषी । मुल्यास्तरम् के स्वनम्बिस्तरम् मुस् मक्रु मुं दे महिता व कि ह्यूना हैना हेंट लें। र्व**ात्रान्य**रः सं देः नास्यः त्नारे मार्नुनाः स्।

ट्रे. ह्र. ल. क्षेट तयट के टि. पृथ क्षेमाम् प्रे. हे हे । मृथ देश मृथ हे नियम मि ते नियम क्षेट तय है नियम क्षेट तथ है नियम क्षेट नियम क्षेट तथ है नियम क्षेट तथ है नियम क्षेट तथ है नियम क्षेट त

चीताक्ष्रभागे सरामी स्वस्त्रभावता क्ष्रभावता स्वस्त्रभागे सरामी स्वस्त्रभागे सरामी स्वस्त्रभागे स्वर्धेन स्वयंत्रभागे स्वर्धेन स्वयंत्रभागे स्वर्धेन स्वयंत्रभागे स्वयंत्रभागे स्वर्धेन स्वयंत्रभागे स्वयंत्रभागे स्वयंत्रभागे स्वयंत्रभागे स्वयंत्रभागे स्वयंत्रभागे स्वयंत्रभागे स्वयंत्रभागे स्वयंत्रभागे स्वयंत्य स्वयंत्रभागे स्वयंत्रभागे स्वयंत्रभागे स्वयंत्रभागे स्वयंत्रभाग

भ्रेष्ययं देन्गुंभाष्ट्रदश्रेत्। मीय सेया कुर्य मूर्य सी र नाय सैया द्वी श्रद्भेत्र अवेद् रोत्य ज्ञेयायात्वत्र अपात्तात्ता चीता.झेस.कुरे.सूस्रा.बेचसा.संसा.पीय.झेसरा.व्.यो सत्यम् सदे से देना अस्य मन्दर् <u> २.डमा इर मीय क्रमा १ श्रास्त मा अर मीय प्राप्त १ कर</u>ा या-विस्तापटाहाहास्या-विस्तापी। हें हें दें नुस्सर्देना येनाश सेंग्य महिंद्र उस प्येत्। यानुससापटाहाहासानुससाय। ल्यमुन्यन्तराष्ट्रस्य हो। महिस्सूर्यायस्त्रीयः ध्रेत्र। मक्षिराक्षेर-तरास्ट है। जुनाक्षेर-वर-पश्चेत-ध्येत। विनावेट वट शेट है। झर सुरे र प्राप्त निवासी श्चर्राम्यावर वर श्र्रेट है। श्चर्गर प्रश्नेर वर वर्षेत केवा रे.बिया.बुरश्रादाश्रदह.हु.हुय.देश.शूट.। रे.क्ष्मीतामिट.

नित्रित्रस्ति सर्वत्या सिंद्वी गोस्मरः मुस्या नित्रस्ति । वर्षा स्त्रस्ति सर्मे स्त्रस्ति । वर्षा स्त्रस्ति सर्मे स्त्रस्ति । वर्षा स्त्रस्ति सर्मे स्त्रस्ति । वर्षा स्त्रस्ति स्त्रस्ति । वर्षा स्त्रस्ति स्त्रस्ति । वर्षा स्त्रस्ति स्त्रस्ति । वर्षा स्त्रस्ति स्त्रस्ति स्त्रस्ति । वर्षा स्त्रस्ति स्त्र

स्राया स्राया हिता के स्राया के स्रा रेम्बरक्ष्यम् वेर्वस्ति रेक्स्पूर्वेष्यम् वर्वस् सर्देश से दे सिट में हुना इ देन केन बेद सामन दे दट के वि है देन लेगा क्रिना स्टिन् भे लेन स्टिन्सिन हो लेन स्टिन्सिन होने स्टिन्सिन स्टिन्सिन ल्ये रेना डेर्या । गी सर पार्से के व से लिट हे पर्नाय से । देते. सक्य मूला मुखराम बादा मिट मूट मूट मूट मूट मुद्दीर याना केर प्रमास सक्ट सूट । वमाया हैव। गोसर यम्द्रित भेर्र् भेर्षे रेयावड्याय सेंटा। शुक्रमार्थित नामित्रम् । युक्रमार्थित हेशसानिसम् रे.क्ट. भारा खेर होना श्रेट न । वना उना ह्वान उना श्रेट भारत नी ने मट विनादट मुनारेटि। भट विनाम उनाद नुया देवा भी भट रहें स लिनान्द्रमुनास्त्। अटलमाम्डिमान्ध्रुन्द्रमुनास्त्। युउस् मुन्यालेना स्टा के स्पन् रहेना ने नका मुन्या है निहा है। मुन्या लास्मार्स्यान्तरम् सार्वेद्रास्त्राण्या विषया सार्वेद्रया गोसन भाजेरकाय। कुलायाये। ५५ रेटापिटामीका अवेका के विमायन्द्रात मिट द से मिर्ड मा मुद्दीर खुत्र त्र स्वर्धा विमा मिर्ड स गुर्ड मुद्दीर स्रीयाया ग्रीसर श्रुटाम लेनाया हु से स्रामा अमी न्यमाने र मान सिंद के सिंद के ना प्रशा हिर मिश्र र मालेना प्रश्त यस। ष्यामु द्राया थे भारतु । भारत्य प्राया विकार स्था विकार । 45CN N

सञ्चरम्हितण्चैशन्देशसः केंद्रन्रा हिर्द्धित्तिम्परसर्यन्यायः वास्त्रत्ये। ब्रीट मानर हेर या नगात हैं के लेगा भरे ते । हि हित्रुमु अने नगत हैं न मुक्ष हिर ने छें र लें। हिन से क्रिंग्न नड मार्डिश नन्न एसायाय नुना केंद्र । सर्दर रचेंद्र में दिस गुन देर भारा शर् र नहमा रक्त्रमुख्यायायर्गाङ्ग्यारम् अर्थाः हिंहित् मुख्यानगत हिंद मुक्या हिर हे छेद स्ट्री। टल्-न्यव में कंट सामान्य साम्याय स्वाप्त स्व स्वाप्त स्वाप्त स्वाप र-इट-बिर-गुंब-ट-ल-अटश-स-वर्ड-इनाना। नैविमानेन्यायायायाः। गोय्यनायाम्तियनुवायायाः स्रो न्दिंश नष्ट्र हे नाव्या र्ढ्या र्वट साय दे हो वा न्यून या लेना न रे हो वा म्रीट्युयायार्शेट है। सम्र मी क्वियार्शेट है। सम्र सम्राह्मित्रे स्रायर्ट्या श्री

त्रीःस्तरः मुः द्वेत्यः सः श्रुः विमान्दः स्याः विमान्दः स्याः स्याः स्याः स्याः स्याः विमान्दः स्याः विमान्दः स्याः विमान्दः स्याः विमान्दः स्याः विमान्द्वः स्याः स

नुपाङ्गमाने सरामा खुताया विशेषा ।

होताङ्गमाने सरामा सरामा स्थाने स्थान

यापि. सूर्य स्वराय राज्य द्वारा स्वराय स्वर

सरमानुभाया कुरायां सिन्द्रान्ता वित्यां मिन्द्रान्ता सरमानुभाया कुरायां मिन्द्रान्ता सरमानुभाया कुरायां मिन्द्रान्ता स्थायां सिन्द्रान्ता सरमानुभाया कि स्थाप्ता सिन्द्रान्ता स्थापता सिन्द्रान्ता स्थापता सिन्द्रान्ता स्थापता सिन्द्रान्ता स्थापता सिन्द्रान्ता स्थापता सिन्द्रान्ता सिन्द्रान्ता स्थापता सिन्द्रान्ता स्थापता सिन्द्रान्ता स

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61. Miniature Tank Worship in Bengal. Compiled by A. N. MOBERLY, I.C.S., Superintendent of Ethnography, Bengal.

In Bengal proper, miniature tanks, dug usually in the courtyard of their houses, enter largely into the religious ceremonies performed by women and girls. This practice is also found in Orissa, but to a less extent, and is still more rare in Behar, although there too ordinary tanks are closely connected with certain forms of worship. The origin of the custom is obscure. Ceremonies in which miniature tanks are used, are usually among those classed as brata, or the performance by women of a vow on a certain fixed date, with the object of obtaining some particular benefit, as contrasted with  $p\bar{u}j\bar{a}$ , or worship of the gods by men or women or both, as a regular religious observance. The tank is probably used symbolically. To dig a tank is a virtuous and meritorious action, which may be performed either to please the gods and thus to obtain happiness in this world and the next, or as an expiation of some known or unknown sin. Misfortunes such as barrenness or the death of husband or children are attributed to some religious demerit, and the miniature tank may therefore represent a penance for sins which have caused or may cause them. In the case of children, by whom the majority of the ceremonies, into which the miniature tank enters, are observed, another object may well be to familiarise them with the idea of worship by presenting it in an attractive form, whilst morals are pointed and explanations given by their elders, and a Brāhman is sometimes called in to perform the final acts. In some instances again, as in the case of the Chat Barat, a miniature tank is substituted by high-caste women for the river or tank, at which the ceremony is usually performed, to obviate the necessity of appearance in public. It seems to be generally agreed that these observances are not of Puranik origin, though the Yama Pukur ceremony is referred to in the Bhavisya Purāna, and in the same work it is related that the unmarried girls of Nanda-Braja worshipped Kātyāvanī Devī in the month of Agrahāyan, praying that Sri Kṛṣṇa, the incarnate Viṣṇu, might become their husband,—a prayer somewhat analogous to those used at more than one of the bratas. The chief arguments against such an origin of miniature tank worship in its present form are that as a rule the worshipper herself officiates as priest, Brāhmans not being generally employed, and that the verses recited are in the current vernacular, and not in Sanskrit, the language of all Purānik mantras.

The number of these bratas is considerable and the forms vary widely in different localities. It is by no means always clear what god or godling is being worshipped, nor is it possible in all cases to decide whether the ceremonies reported from different districts are merely local forms of one observance or are entirely distinct. They have therefore been arranged chronologically according to the months in which they take place. In some nstances the tank employed is not necessarily a miniature tank, and in a few the tank is not indispensable to the ceremony at all.

The chief tank ceremony of Baiśākh, and perhaps the most widely observed of all, is the Punya Pukur or, as it is some-

times called in Rajshahi, where the tank is Punya Pukur. not invariably used, the Dharmma Pukur. The tank is dug near the household tulsi plant (Ocimum Sanctum) or, sometimes, on the bank of the Ganges. A small branch of the bel tree (Ægle Marmelos) bearing seven thorns is fixed in a small ball of clay in the centre and adorned with wreaths of ākand flowers (Callotropis Gigantea), which are renewed from time to time during the month. Two cowries or, in some districts, a branch of the bel tree are placed at each corner. Seven steps are made at the sides and eight cowries smeared with vermilion are placed upside down on each step. In Burdwan dūrbbā grass (Panicum Dactylon) and bel leaves smeared with candan (Sandal) and vermilion are substituted for the cowries. Figures of gods and heroes are usually painted on the ground near the tank with sandal paste and adorned with vermilion. In Rajshahi, however, two images known as Bhādā and Bhādī and decorated with flowers and vermilion are substituted. In Burdwan clay figures are made to represent Siva and Durga, and a betel-nut and a cowry are placed before them; whilst in Bankura no figures are used at all. In Jalpaiguri twenty smaller tanks adorned with flowers and vermilion are dug round the central

The tank is worshipped every morning in Baiśākh by girls of from eight to thirteen years. The worshippers are usually unmarried, but this is not a sine quâ non. They first bathe and then worship with flowers, tulsī, dūrbbā grass and paddy. A short verse is recited and a flower is thrown into the tank, which is daily filled with fresh water. This is repeated three times. The worshipper must not eat anything until the worship for the day has been performed. Should she be unable to fast on any day, a substitute who has duly

fasted must take her place.

This ceremony must be performed for four successive years. On the last day of the last year the clay figures of Siva and Durgā are replaced by golden images (a golden frog or fish is used in the cases in which the figures of Siva and Durgā are not employed), and a bel twig of silver is placed in the middle of the tank. A fan, a towel, an earthen waterpot and a dish of rice are placed at each of the four corners. The family priest performs all the ceremonies which are observed in the consecration of a real tank. At the end of the brata the above-mentioned accessories together with as many cowries as would be required to fill the tank and pave its ghāts are given to Brāhmans.

The object of the Punya Pukur Brata are explained by the following verses which are a specimen of those used at the ceremony. In some cases girls use their own rhymes

instead of adhering rigidly to the prescribed forms.

PUNYA PUKUR.

Punya pukur puspa mālā Ke püjere dupur belā? Āmi satī gunavatī Bhāyer bon bhāgyavatī. Habe putra marbe nā. Prthibite dharbe nā: Svāmir kole putra dole, Maran hav vena Gangā jale. Gangā jale śankher dhyani. Mare vena hai rāi rānī. Ebār mare manusva haba. Brāhman kule janma pāba. Sitar mata satī haba. Rāmer mata svāmī pāba. Laksmaner mata debar pāba. Daśnrather mata śvaśur pāba, Kauśalyār mata śāśurī pabā. Girirājer mata bāp pāba, Menakār mata mā pāba. Durgār mata sohāgī haba. Kārttik Ganes bhai pāba. Kuberer dhan pāba, Ābirer bar pāba.

#### TRANSLATION.

"Who is worshipping the tank with garlands of flowers at noon? It is I, chaste and virtuous, fortunate sister of a brother. May I have sons who will not die and (so many) that earth shall not contain them. May I die in the Ganges whilst my son rocks in my husband's bosom. The conch sounds on the Ganges; may I become a queen when I die. May I become a human being (again) after death and be born in the family of a Brāhman. May I be chaste like Sītā, may I have a husband like Rām, a brother-in-law like Lakṣman, a father-in-law like Daśarath, a mother-in-law like Kauśalyā, a father-like Girirāj, a mother like Menakā. May I be beloved like Durgā; may I have Kārttik and Ganeś as brothers; may I obtain the wealth of Kuber and the boon of Ābir."

The Tuṣālu is observed in Baiśākh in the 24-Parganas. Elsewhere this ceremony is performed in Pauṣ. One hundred

Tus Tusālu. and twenty balls are made of the husks of new paddy (tus) mixed with cowdung,  $d\bar{u}rbb\bar{a}$  grass and mustard  $(Saris\bar{a})$  and radish  $(m\bar{u}l\bar{a})$  flowers. Four of the balls are worshipped each morning with similar flowers. On the last day of the month six buri and six (126)

<sup>1</sup> Literally "king of mountains," i.e., Himâlaya, the husband of Menakā, father of Durgā and father-in-law of Sīva.

of these balls are placed in an earthen pot. Fire is set to them and the pot is floated on a tank. An equal number of cakes (but in Jessore 144 cakes) are made of ground rice boiled in sweetened milk and are eaten by the worshippers, who, as before, are young girls. This ceremony must also be observed for four years. The form described above is reported from Jessore, 24-Parganas and Midnapur. A miniature tank is not an indispensable adjunct in those districts. In Mymensingh, however, a miniature tank is always used, and the ceremony is similar to that of the Bel Pukur Brata described below, except that balls made of cowdung and chaff are substituted for the clay balls used at the Bel Pukur. The following is a specimen of the verses recited at the morning worship of the tus balls in Midnapur. The translation is very rough, as the Bengali verses are to a large extent a jingle in which the meaning is sacrified to the rhyme.

Tuş Tuşalu.

Tuş tuşālu tuşkarnī
S'āge bhāte puşkarnī.
Gāi bāchur sariṣār phul
Āmrā pūji bāp māyer kul,
Bāp māyer dhan nāṇi cāṇi,
Svāmīr dhane adhikārī.
Ghar karbo nagare,
Marbo sāgare.
Tuş tuṣālu māi, tuṣ tuṣālu bhāī,
Tomār kalyaṇe āmi cha buri piṭhe khāi.
Cha buri piṭhā Gāṅge bāli Gāṅg sināne yāi.

#### TRANSLATION.

"We worship our parents' families, chaff balls, the tank with rice and vegetables, the cow, the calf and the mustard flower. We are dependent on the wealth of our parents till we acquire a right to the wealth of our husbands. We will make our home in the town; we will die where the Ganges meets the sea. Chaff balls, you are our mother and our brother. By your blessing I eat six score cakes. Six score cakes like sand in the Ganges. I will go to bathe in the Ganges."

One of the few instances of miniature tank worship in Behar is found in the Batṣābitrī, which is observed in Muzaffarpur

Jyaistha. in the month of Jyaistha. A tank is dug in the courtyard and a branch of the banyan tree is placed in it. It is then worshipped by married women with sweets, flowers, āipan (rice ground with turmeric) and vermilion, and prayers are offered that their husbands may be long-lived and like Siva. There seems to be no corresponding observance in Bengal.

In Murshidabad an image of Sasthi is placed beneath a branch of the jack tree which is planted on the bank of a

miniature tank for the Aranya Sasthī Pūjā on the 6th day

of the moon in Jyaistha.

The only instance of tank worship in Aṣāṛh is the Karomā-ditya, which is observed in Mymensingh. On the last day of Aṣāṛh a tank is dug inside the house and filled with milk. Offerings (naibedya) are made and the husbands are worshipped.

The Jituā Pūjā is observed in Jalpaiguri in Bhādra. It is performed in order to obtain anything which the worshipper particularly desires, and is not limited to any particular object. Small fishes are placed in the water of the miniature tank, and its banks are

adorned with moss and grass.

On the last day of the month the Bhādai Pukur ceremony is performed in Rangpur by little girls who wish to unite themselves by a tie of friendship. Miniature tanks are dug and connected with one another. Kalmī (Ipomæa reptans) and pānā (Salvinia Cucullata) shrubs and fishes are placed in the tanks whilst small wooden boats are floated on their surface, and naibedya or rice offerings are placed on the banks. There is music, and the relatives and friends of the children are feasted.

The chief tank ceremony of Āśvin, variously known as Dviti-bāman, Dvitīya-uṣā, Po-jeonta and Jimutbāhan, takes

place on the 8th day of the dark half of Jimutbāhan. the month, the day on which Dviti-bāman or Jimutbāhan, the son of the Sun, in whose honour it is held, was born. Its object, when performed by barren women, is to obtain children, and, when performed by others, to secure longevity for their offspring. Failure to perform it brings stillborn children, death of offspring and widowhood. It is only performed by married women. Its form varies somewhat in different parts of the province (it is only in vogue in Bengal and Orissa), but the miniature tank is always present. In Angul it is customary for the worshippers to perform a preliminary ceremony after bathing on the previous day, when the female kite and the female jackal are worshipped at the ghāt and food is only taken once. On the day of the brata itself they fast all day and go in the evening to the tank, which is made at cross roads. Above the tank is a bamboo roof covered with new cloth and hung with garlands. A cocoanut and a tulsi plant are placed in the tank, a bundle of sugarcane is put at its side, and around it twenty-one kinds of edible fruit collected by each worshipper are arranged in baskets. The ceremony is performed sometimes by a Brāhman widow and sometimes by one of the worshippers with rice, milk, turmeric and flowers, and the story of Dviti-baman is recited. The fruit is then taken home. Part is given to the neighbours, and the rest is cooked, and, after a portion has been offered to Dviti-baman, the female kite and the female jackal, eaten by the worshippers and their relatives.

Elsewhere a square tank is dug in the courtyard, and

is somewhat differently adorned. In Bonai fishes are placed in the water, and the kite and jackal are represented by clay figures on the banks, on which branches of bel, mahuā (Bassia latifolia) plantain, sugarcane and other trees are planted. In Talcher, cowries and turmeric are put into the tank besides the fish, and a betel-nut smeared with sandal and decorated with flowers—the symbol of the god—is placed on a miniature island in the middle.

The Gārusi Brata is performed in Mymensingh on the last day of Āśvin by married women who have lost their mothers-in-law. The tank is dug near the household tulsī plant, pānā is placed in it, and it is worshipped with flowers and dūrbbā grass. A clay pig is sacrificed, and eight kinds of vegetables

are first presented and then cooked and eaten.

The period comprising the month of Karttik and the first eight days of Agrahayan is known as Yamastaka, when, on

Kārttik.
Yamapukur.

account of the unhealthiness of the season, the eight gates of the domain of the god of death are never closed. It is in this month, therefore, that Death is propitiated by young girls of seven years or less in the Yama Pukur or Kārttik Pukur Brata. The ceremony is observed throughout Bengal with the exception of the northern districts of Jalpaiguri and Darjeeling, although, as in the case of many of the brata described in this paper, it is gradually dying out in the towns with the spread of Western education. The forms vary considerably in detail, and in Bhagalpur, its north-western limit, the differences are

so great as to call for a separate account.

In Bengal proper the tank is rectangular in shape, the longer sides running from north to south, and is usually dug close to the household tulsi plant, but in Tippera close to the plinth of the house. Various aquatic plants, such as kulmī, śuśni (Mar elia Quadrifoliata), and pānā, one or more small fishes, and, in Birbhum, seven snails, are placed in the tank, which is refilled each morning. Paddy is sometimes sown or planted in the centre. In Rangpur seven ghāts are made and each is filled with turmeric, ginger, tusī and flowers. Various shrubs such as hiñcā (Enhydra fluctuans), ginger, tulsī and turmeric are planted round the tank, and, in Burdwan, rabi seeds are sown. The corners are sometimes marked with kacu (Colocasia antiquorum), kalā (plantain), mān (Alocasia indica), and halud (Curcuma Longa), and sometimes with branches of the banyan tree. In Birbhum seven cowries are placed on the southern  $gh\bar{a}t$ . In Tippera a small earthen plate of rice is placed near the tank. Clay figures are often put on the banks. These sometimes take the form of Yama and Yami. In Tippera his followers Yamaduta and Kaladuta are added. In Howrah they represent fishermen, dhobis and their wives, and women who collect aquatic plants. The idea here appears to be that these people, who are those who make the most frequent use of tanks, are appointed witnesses to testify to the due performance of the ceremony

before the god of death at the day of judgment. In Eastern Bengal clay figures of two crows and two kites are posted at the corners, and in some districts vultures or other birds are made to hover over the tank on sticks. The clay figures are brought daily in an earthen pot and arranged for the day's worship and are put back again when it is over. The worship is usually performed by the girl herself, but in Rangpur the family priest recites the mantras and worships fourteen Yama. Elsewhere Yama is worshipped with flowers, paddy, dūrbbā grass, and vermilion. In Tippera the girl dips the  $d\bar{u}rbb\bar{a}$  grass in water and touches each of the clay figures, calling on them to drink. After the ceremony, when she has put away the clay figures, she sits down with a few blades of  $d\bar{u}rbb\bar{a}$  grass in her hand and listens to the account of the Yama Pukur which is given by an elderly woman of the family. The story is to the effect that there was once a man whose wife was devoted to the worship of Yama. Her mother-in-law was displeased because she paid so much attention to Yama, and scoffed at her. After a time the mother-in-law died during her son's absence. On his return he performed the Srāddha but his mother's soul would not accept it, as Yama was tormenting her with thirst because she had scoffed at her daughter-in-law for worshipping him. The son asked his mother's soul how the god could be appeased, and was told to get his wife to perform the Yama Pukur ceremony with great pomp. She also appeared in a dream to her daughterin-law and begged her to have mercy on her. The ceremony was accordingly performed and the soul found rest.1

The Yama Pukur Brata is performed daily from the last day of Aśvin to the last day of Kārttik. It must be finished before sunrise. It has to be performed for four years. The effects are to secure for the worshipper, her parents, her future husband's parents and her ancestors, blessings in this world and relief from torment after death. Speedy marriage, a good husband, and chastity, are also prayed for. The following is a specimen of the mantrus used in Midnapur:—

YAMA PUKUR.

S'uśni kalmī laha laha kare, Rājār betā pakṣī māre, Māruk pakṣī śukāk bil,

I Such is the story generally current. Other accounts of the origin of the Yama Pukur are—(i) A wife was so attentive to her husband that she had no time to attend to religious ceremonies. On her death she was greatly terrified, expecting to be condemned for her neglect. She accordingly came down to earth and performed the Yama Pukur brata, which so pleased Yama that he pardoned her and gave rest to her soul.—(ii) A certain queen had done good works during her lifetime, and on her death Yama promised to grant her any boon she might ask. She requested that she might be restored to life, and her prayer was granted on condition that she performed the Yama Pukur ceremony.



Sonār kāmtār rupār khil,
Kāgā bagā sāksī thāk,
Yama pukurti pūji;
Yamer māsī sāksī thāk,
Yama pukurti pūji;
Yamer khurī sāksī thāk,
Yama pukurti pūji;
Yamer jethāi sāksī thāk,
Yama pukurti pūji;

## TRANSLATION.

Tarrett reactions

"The susni and the kalmi plants are waving: The Raja's son is killing birds. He kills the bird. The tank is dried (to recover the bird). A golden box with silver hinges (is found). Crow and crane bear witness that I am worshipping the Yama Pukur. Let Yama's maternal aunt bear witness that I am worshipping the Yama Pukur. Let Yama's paternal aunt and grand-aunt bear witness that I am worshipping the Yama Pukur."

The miniature tank, though usual, is not essential in Orissa, where the ceremony is known as Kārttik Pukur. Girls who find the form described above too difficult offer flowers, plantains and various shrubs to Rādhā Kṛṣṇa after performing their ablutions, and on the last day a plantain trunk is floated in

the water with lighted earthen lamps upon it.

In Bhagalpur the Karttik Pukur Brata is performed on the same days as the Yama Pukur in Bengal, though on account of the difference in the calendar it falls there from 15th Karttik to 15th Agrahayan inclusive. It is performed by brides during the first year of their married life with the object of securing the bridegrooms from death. A miniature tank is always employed among high-caste Hindus, but the village tank is often used by others. The former is in this case clearly substituted for the larger tank by those who do not appear in public. The miniature tank is dug in the courtyard. Five vermilion marks are made on each bank and twelve varieties of grain are sown there. A pole is planted in the centre, and a boat with rudder and sail is floated on the surface. The girl who is performing the ceremony may not bathe during the entire period of thirty days. The tank is worshipped early every morning after the necessary ablutions have been performed, and no food or drink may be touched until the ceremony for the day has been completed. Old paddy is offered during the first fifteen days, and new paddy for the remainder of the period. The paddy is kept in two kothis made of cowdung, one for the old and the other for the new paddy. An oblong cowdung cake is made on each of the first fifteen days, and a round cake on each of the other days, and all are arranged at the side of the tank in a line which is called Rākhi Catti.

After the daily offering of paddy has been made, the chief

woman of the house, who supervises the ceremony throughout, tells the story of the Karttik Pukur:-There were once five girls who were great friends. One day one of them, who was a Goalin, found the others, who belonged to the higher castes, performing the Karttik Pukur Brata. In answer to her enquiries they told her that by performing the ceremony they could obtain anything they desired from the guardian of the tank, and, in particular, that they would not be left widows; but that she could not imitate them, as, being only a Goalin, she would not have the endurance to abstain from bathing and eating chāli and to perform the various rites with sufficient strictness. Paying no heed to their warning, the Goalin joined enthusiastically in their worship, but on the fifteenth day she secretly bathed and ate chāli. The god of the tank was very angry and tormented her by nightly visits. He came on a black buffalo, tore and dirtied her clothes and disarranged her hair. In the morning her husband's sister, seeing the condition of her clothes, accused her of an intrigue and at last informed her husband. Her brothers then took her to task, and, on being told the story, decided to watch secretly in order to test its truth. At midnight they found themselves face to face with the god, who explained that their sister was suffering a just punishment for her sins and that they could only be expiated by a rigid performance of the ceremony from the beginning. This was done. Shortly before the end of the month's worship, the Goalin wished to give a feast to her brothers and sisters, but at the last moment found that she had no fuel. She sent her servant to get some, and, whilst she was absent, cut the woman's child to pieces in order to test the powers of the god. The servant, returning with the fuel, met a line of ants, and strewed fresh  $d\bar{u}rbb\bar{a}$  grass and sugar for them. Gratified by this attention they requested her to ask a favour of them. On her replying that she desired nothing, they told her that her mistress had killed her child, and said that she would find it alive. The miracle was performed, and the penitent Goalin never again doubted the power of the gods.

The worship for the day is then completed by the pouring of four libations of water brought from a river or tank by a woman whose husband is alive, in the name of the cow, of the mother, of the mother-in-law and of the worshipper herself in that order:

On the fifteenth day some paddy is spread on the banks of the tank. When dry, the girl measures out thirty-two pailās—sixteen in the ordinary manner and sixteen with the pailā inverted. The paddy is again spread out and no attempt is made to scare the birds away.

On the last day of the *brata* at the end of the morning's observances, a she-calf is placed across the tank with its forefeet and hind-feet on opposite banks, and the worshipper is made to pass under it, assisted by her brother, or, in his absence, by her brother-in-law.

What remains of the paddy is then collected and ground, and sixteen large and sixteen small rice cakes (pithā) are made by the worshipper, who, in all these processes, may use the right hand only. The girl fasts the whole of the last day, and at dead of night eats the two ends of each of the large rice cakes. If the voice of any living thing reaches her ears whilst she is eating, she must at once stop and may not swallow any food that may be in her mouth. The remainder of the large rice cakes is then distributed among her relatives and neighbours. Four of the smaller rice cakes are placed on the roof as the share of the crows; four underneath a tulsī plant as the share of Viṣṇu; four at the foot of a plantain tree as the share of her mother; and the remaining four at the side of the tank for her mother-in-law.

After the conclusion of all the ceremonies, the cowdung kothi and cakes are destroyed; marks of rice paste are made

on the surface of the tank, and it is then filled up.

In Angul a miniature tank is made at the foot of the household tul i plant on the fourth day of the light fortnight of Karttik. It is filled with milk, water, Nāgāli Caturthī. aquatic plants, and plantain shoots, whilst sugarcane and paddy are planted on its banks. Figures of the snake godlings, Nag and Nagini, made of rice paste, are placed beside it, near a piece of earth taken from an ant hill, their favourite haunt. They are worshipped with rice, milk, sugar and flowers, usually by girls and women, though men occasionally join them. The observance of this Nagali Caturthi is connected with a Puranik story about a woman who recovered her evesight by worshipping Nag and Nagini. The worshippers apply some of the milk and water, with which the tank is filled. to their eyes, with the object of securing themselves against eve diseases of various kinds.

The Chat Barat is observed throughout Behar and also in part of Chota Nagpur on the 20th, 21st and 22nd Kārttik, and again, though not universally, on the corresponding days of Caitra. High-caste women sometimes substitute a miniature tank for the river or tank at which the ceremony is usually performed. The rites are the same in either case.

The worshippers, who are either men or married women, fast on 20th but take a little food at night. On the evening of the 21st they go, after fasting all day, to a tank or river, dip themselves and offer arghya by pouring milk and water over a basket full of cakes, cocoanuts, plantains and other fruits. They may eat part of the contents on coming out of the water, but the same ceremony must be performed again before sunrise, facing eastwards. The deity worshipped is the sun. In Chota Nagpur, where this brata is also performed on the last Sundays of Baiśākh and Agrahāyan, flowers and eatables are at the same time thrown into the tank in honour of Barun—the chief of the water gods. In Shahabad, clay figures of Chat and Chați are

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worshipped at a well or tank during the ceremony, and the contents of the basket are afterwards distributed amongst the

neighbours and relations of the worshippers.

The Bel Pukur is worshipped from the last day of Kārttik to the end of Agrahāyan for four years. It is not as widely observed as the Punya Pukur Brata, which it closely resembles, the only marked difference being that clay

balls are substituted for the cowries or bel branches at the corners of the tank, and is not found west of Jessore. In addition to the prayers for chastity and a good husband, curses are in some places called down upon the prospective  $Satin\bar{\imath}$  or co-wife. The Sāmjuti Brata takes the place of the Bel Pukur in the western districts and is specially directed against the co-wife. As its name implies, it takes place in the evening. In several districts no tank is used, but figures of gods and heroes, of the temples of Mahādeva and Bhagavatī, of the sun and moon, of the Jamunā and Ganges or of household utensils, are invariably drawn on the ground with rice paste and worshipped with flowers and  $d\bar{u}rbb\bar{a}$  grass.

The following are among the verses recited at the Bel Pukur

and Sāmjuti:-

#### BEL PUKUR PRĀRTHANĀ.

Rāmer mata pati pāi, Sītār mata satī hai, Var yena sukhī hay, Satinī yena mare yāy, Satinīr hok nāk kān kāṭā, Āmār hok sonār pāner bāṭā, Satin habe svāmīr do, Āmi haba svāmīr so, Satinīr pathe parbe kāmṭā, Āmār habe sonār beṭā, Satin habe āmār dāsī, Āmi karbo hāmsi khusi, Svāmīr haba sohāginī, Āmstā kur jhāmṭibe satinī.

#### Sāmjuti.

Sāmjai pūjā sāmjuti,
Bāra ghare tera bāti,
Lakṣmīr ghare ghaṭṭi.
Ghaṭṭi (tule māllām caṛ) thuye māgi bar,
Āmār bāp bhāi dhan daulate lakṣmīśvar.
Hut biṛāli hut khā,
Bhātār put thuye satin khā.
Guyā gāch begun gāch guṭi dhare mājā,
Bhāi hayechen dillīśvar bāp hayechen rājā,

Ākāše yataguli nakṣatra tataguli bhāi,
Siva Vasu pūjā kare daure ghare yā.
Rājāder beṭi dolāy āsen dolāy yān,
Candan kāṣṭhe rendhe khān.
Būp rājā bhāi pātra,
Svāmīr māthāy rāj chatra.
Hātā hātā hātā,
Khāy satiner māthā.

Beri beri beri, Satin beti ceri. Khorā khorā, Satinke laye yāy tin minse gorā. Bāms bāms bāms, Satiner hay yena yaksmā kās.

#### TRANSLATION.

#### Prayer at the Bel Pukur.

"May I have a husband like Rām; may I be chaste like Sītā, and may my husband be happy. May my co-wife die. May her nose and ears be slit, but may I get a golden bowl. May my husband hate her, but may I be his best beloved. May her path be strewn with thorns, but may I have a golden son. May she be my slave whilst I pass my days in laughter. May I be my husband's darling, but may my co-wife spend her time in sweeping the dust bin."

"For Sāmjuti, the evening pūjā, place thirteen lamps in twelve rooms and a pitcher in Laksmi's room. Placing the pitcher in Laksmi's room I will ask this boon:—May my father and brother be lords of wealth. May the wild cat eat the offering, and spare my husband and son, but eat my co-wife. The betel palm and the egg plant bear fruit. My brother has become lord of Delhi and my father has become king. I have as many brothers as there are stars in heaven. I run home after worshipping Siva and the Vasu. The daughter of kings comes and goes in a palanquin and uses sandalwood for cooking. My father is king, my brother minister, and the royal umbrella is spread over my husband's head. May the co-wife's head be eaten, may the cursed co-wife be a slave. May three white men take her away and may she die of consumption."

In Shahabad, where the Bel Pukur is unknown, similar clay
Other Agrahāyan
Brata.

balls are used in the Aghan-Pindi Pūjā.
They are placed at the front door of the house and worshipped with songs and fruit by girls, who fast until after the performance of the ceremony.

In Jalpaiguri the Nātai Pūjā is observed by every unmarried

Nātai Pūjā Hindu girl on each Sunday in Agrahāyan.
An image of Nātai is made from a plantain

stem about six inches in length and placed beside the miniature tank, whose banks are daubed with rice paste and adorned with marigolds and mustard and kalmī flowers. The tongue, which protrudes like that of Kālī, is made of the pointed end of a karabī leaf (Nerium odorum), and the arms of kacu stems. The tongue and the eyes are reddened with vermilion. Rice cakes are offered to the goddess at dusk. Half are made with salt and half without. At night they are eaten before a lamp by the unmarried girls, and those who get the salted cakes have the best chance of marriage in the course of the year. The main object of the ceremony is to obtain a desirable bridegroom, but it is also efficacious in securing the recovery of lost treasure and reunion with absent friends.

In Chittagong, where the Bel Pukur is also unknown, maidens collect small plants of paddy and kalmī and worship the sun each Sunday in Agrahāyan with prayers for an ideal husband.

In Khulna a miniature tank is filled with milk and water. A bundle of paddy set with rye flowers is planted by its side, and Gauri, the goddess of plenty, is worshipped with offerings of  $P\bar{a}s\bar{a}n$  or hard cakes. These are subsequently eaten and from them the ceremony derives its name of  $P\bar{a}s\bar{a}n$  Caturddasī.

This and the Agrahāyan Sasthī ceremony, which only differs from it in that Sasthī, the guardian deity of children, is worshipped instead of Gaurī, are probably in their origin harvest festivals.

The Pāṭai Pūjā is performed in Jalpaiguri by matrons, with the object of averting sterility, or a tendency to miscarriage or to bear still-born children, or harm to children already born. It

closely resembles the Nāṭai Pūjā but in this case the image is made of binnā (a kind of straw), and is adorned with mustard flowers and marigolds. The ceremony is performed in the evening. The worshippers fast all day, and, after the completion of the pūjā, partake of the cakes cooked in milk and sugar which have been offered to the deity.

The Dhanya Pūrnimā Brata is observed in Noakhali on the night of the Paus full moon. A plantain and a bamboo are planted beside a miniature tank and the moon is worshipped with

flowers and  $d\bar{u}rbb\bar{a}$  grass by a priest.

The Māgh Maṇdal Brata continues for the whole month and is concluded on the last day by a Brāhmaṇ.

Māgh. It is observed only in Central and Eastern Bengal. A full-sized tank is sometimes used, but a miniature tank is more commonly employed. Three series of concentric circles representing the sun and moon with the earth between them are drawn on the ground in the courtyard. After bathing, unmarried girls recite mantras to the sun and scatter flowers over them. A representation of the phallic emblem of Siva is made of a plantain sheath and floated on the tank. Prayers are offered for an ideal husband, and are sometimes combined with curses on the co-wife. The following are among the verses recited.:—

#### MAGH MANDAL BRATA.

Sūryya āschen dhalā ghorāy care, Asben sūryya basben khāţe, Näiben thuiben Gangar ghate, Culgāchi mele diben cāmpār dāle, Kāpar khāni mele diben bara gharer cāle, Khāiben laiben subarņer thāle, Bhājā khāiben rikābi rikābi, Bhāla tarkāri khāiben kotarā kotarā, Ambal khāiben khādā khādā, etc., etc., etc., dadhi kṣīr miṣṭānna, etc., etc. Utha utha sūryyare jhikimiki diyā, Nā uthite pāri āmrā iyaler lāgiyā. Iyaler pancaguți kirane thuiva. Süryya uthben kon khān diyā? Bāmaņ barīr ghātā diyā. Bāmauga meyerā bara seyān, Paitā yogāy behān behān. Utha sūryya uday diyā, Nabīn pāitā galāy diyā, Rāngā lāthi hāte kare, Simul gamchā kāndhe kare, Süryya uthben kon khān diyā? Bat aśvatther āgā diyā. Bat asvattha melana pāt; Süryya thākur Jagannāth. Āmer baul āsere bārī bārī, Süryyer baure dei āmrā pārsī sārī. Āmer baul āsere bārī bārī, Süryyer baure dei āmrā Bānārasī sārī. etc., etc., etc., etc. Āmer baul āsere locā locā, Süryyere dei āmrā cikkan kocā. etc., etc., etc., etc. Kāni bagi bagi tuita āmār sai, Māgh maņdaler brata karte ghāt pāinu kai? Āche āche la ghāṭ-Bāmaṇ bārīr ghāṭ, Rāt pohāle bāmaņrā paitā māje tāta. Paitar kaclāinā jal pukurete bhāse, Tā dekhe māilānī khat khatāye hāse. Hāsis kene la māilāni tuita āmār sai, Māgh Mandaler brata karte ghāt pāinu kai? Ache ache la ghat-Baidya barir ghat. Rāt pohāle Baidyerā pūjā kare tāta, Tāhār sothlāinā jal pukure, etc., etc.

## TRANSLATION.

"The Sun is coming riding on a white horse. He will sit on a carpai and bathe and rise at the Ganges ghat. He will spread

his hair on a cāmpā branch (Michelia champaca) and will spread his clothes on the large house. He will eat from a golden plate, will eat fried food dish after dish, and good curry, cup after cup,

and quantities of acid things, curds, sweetmeats, etc., etc.

O Sun, rise up with thy brillant rays. We cannot get up because of the mist. The five strata of the mist keep back the rays. Where will the Sun rise? By the ghāt of the Brāhman's house. The Brahman women are very clever and offer sacred thread

morning after morning.

O Sun, rise up, put a new thread round thy neck, take a red stick in thy hand and a cloth red like the flower of the cotton tree on thy shoulder. Where will the Sun rise? He will rise over the banyan and the pipal. O banyan and pipal, expand your leaves. The Sun is god and lord of the world; mango blossoms appear in every house; we give the Sun's wife a persian sārī. Mango blossoms appear in every house; we give the Sun's wife a benares sārī, etc., etc. Mango blossoms come in profusion; we give the

Sun a dhoti of flowered muslin, etc., etc., etc.

O blind Bagi, thou art my companion. Where shall we find a ghāt for the Māgh Mandal Brata? There is a ghāt—the ghāt of the Brāhman's house-where the Brāhmans wash their sacred threads at daybreak. The water, purified by the threads, rises to the surface of the tank. Seeing it Māilanī laughs aloud Māilāni, why dost thou laugh? Thou art my companion. Where shall we find a ghāt for the Māgh Mandal Brata? There is a ghāt—the ghāt of the Baidya's house. The Baidyas worship there at dawn. The water used in their worship rises to the surface of the tank," etc. etc. (mutatis mutandis for other castes).

The Magh Snan Brata is similar to that last described and is also observed in Eastern Bengal. The Earth, Sun and Moon are, however, only worshipped on the last day. On the other days the tank is worshipped with flowers, plums and dūrbbā grass, and an altar, built round a small plantain tree beside the tank, is adorned with similar offerings.

The Pūrnamāsī Brata takes place in Mymensingh on the day of the Magh full moon. A plum and a binna plant are placed beside a miniature tank and worshipped with rice and eatables by women for the welfare of their children. Pictures are made of

rice paste on the ground near the tank.

One of the most curious forms of tank worship is the Pācāi Nistār which takes place in Darbhanga in Caitra. It is performed by married girls only. The tank is Caitra dug in the courtyard at dawn by the Pācāi Nistār. brother of the worshipper or, in his absence, by her husband's brother. Bushes are placed round it and a pole similar to those in full-sized tanks is planted in the centre. After fasting for twenty-four hours, the girl takes her seat facing

eastwards. Between her and the tank, under a canopy (which with the centre pole or jāth is kept from year to year), is a figure of Gauri, made of turmeric. In front of it is placed a plantain leaf containing an offering of arwa rice, plantains and sugar.

Beside the girl are three earthen pots. Two stand on plantain leaves and contain curā and sāttu. In the third is an earthen Behind her are placed a clay image of Gauri and an empty handi which represents the co-wife. The girl first worships the vellow Gauri, and then, without turning, worships the clay idol with her left hand, to show her contempt for the co-wife. The worship is directed by elder women, who are invited to see it and are given presents on its conclusion. The ceremony is repeated for five years. The number of accessories of each kind increases with the number of years, so that in the last year five times as many articles are required as at first. In the last year the girl fasts all day after the ceremony, and at sunset enters the house and feeds a Brāhman virgin, to whom she also gives her clothes. The two girls and the worshipper's brother keep a vigil throughout the night. In the centre of the room is a coloured square of solā (Æschynomene A pera) on a pirhā or plank. It is covered with a piece of cloth, and from each corner hangs a solā ball. All three have to get up three times during the night and hold up the pirhā whilst the worshipper asks, "Has Nistār been performed?" to which the others answer, "Yes." In the morning the sola square and the images of Gauri are thrown into the tank, and on the worshipper's return to her home a feast is given by her husband.

Basanta Rāy is worshipped in Mymensingh in Caitra and Baisākh. The tank is dug three days before the ceremony and plantain trees are planted on three sides, that nearest the house being left open. A bride and bridegroom are made of plantain stalks and dressed in red cloth. They are married, and the women sing whilst the bride is turned seven times round her husband. Next morning a goat is sacrificed to Bhairab at the riverside, and the mock bride and bridegroom are thrown into the water.

Occasional
Ceremonies.

Which are not limited to any particular month At the Punarbibāha the husband and wife utter purifying mantras beside a

miniature tank at the time of the first menstrual flow.

The Bārī Bibāha is the name given to the ceremony in which, in Bengal, the bride and the bridegroom bathe in a similar tank on the day after marriage. An analogy is to be found in the worship of the Ganges by newly-married couples in Behar. When a visit to the Ganges is impossible, they may make their offerings at some other river, or, failing that, at a tank. But until the ceremony has been performed, they may neither cross a river nor touch its water.

For the Dusuli Pujā a miniature tank is dug at twilight and pictures are made with rice paste on its banks. It is worshipped with 30 hotel home with a second to be a secon

with 30 betel boxes with some particular worldly object.

Daria Pir is worshipped by pregnant women for safe delivery.

About a seer of rice must be begged, fried and presented to the
tank. Two images of a male and female are laid together on a

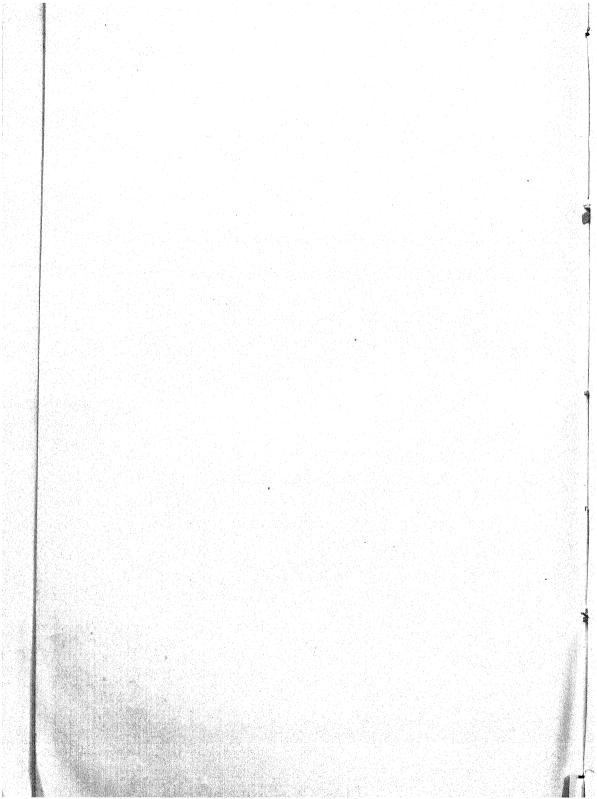
plantain leaf beside it. Fruit is presented by being laid on one side of the tank. It is then moved to the other side and eaten,

and the images are thrown into the water.

Lastly there is the Subacanāi Pūjā. In Jalpaiguri a miniature tank is dug with twenty-one smaller tanks round it. The banks of all are painted with vermilion and alipana (rice paste), and a duck, made of powdered rice, is placed near the central tank. Offerings of pan (Piper betle), betel-nuts, vermilion, mustard-oil and plantains are placed in a cane basket. The tanks are worshipped at midday by mothers for the welfare of their children because the goddess Šubaanāi is believed to have the power of restoring life to the dead. The story, which is recited by the oldest woman present, is that a certain Raja threatened to put a Brahman's son to death for killing his ducks. The boy's mother appealed to Subacanai, the ducks were brought to life and the child was saved.

A ceremony of the same name is performed in Purnea in the second or light half of any month, but it bears no resemblance to that just described. It is performed by unmarried girls only, with the object of attaining wealth, happiness and good husbands, and lasts for a fortnight. Four tanks are dug and filled with milk, water, dūrbbā grass and vermilion. They are worshipped with flowers, rice, plantains and sandal-wood, whilst rhymed mantras are recited.

It is not easy to trace any idea which is common to all the tank ceremonies. The objects of several of them are identical, and it may be that further enquiry will show that they have a common origin. Others, however, differ widely, and it seems to be impossible at present to arrive at any very definite conclusion as to the reason for the introduction of the tank, which in some cases does not seem to be an essential at all.



#### 62. Salīma Sultan Begam.—By H. BEVERIDGE.

This lady was one of Akbar's wives and was probably the cleverest and most attractive member of his seraglio. both intellectual and tactful, and had much influence over her husband and his son Jahangir. She had also a poetic vein, and one of her verses used to be famous. She was the niece of Gulbadan Begam, the authoress of the Memoirs of Humayun, and accompanied her on her pilgrimage and shared with her the dangers of a shipwreck in the Red Sea and the subsequent detention at Aden. By birth she was a cousin of Akbar, her mother being Gulrukh Begam, a sister of Gulbadan Begam and half-sister of Humayun the son of Babar and father of Akbar. Her father was Mirzā Nūru-din Muhammad Nagshbandi, who was the son of Mīrzā Alāuddīn and belonged to a family of saints. Of Nuru-d-din we only know that he was Governor of Qanauj, and that he instigated Hindal to rebel against his brother Humayun.

Salima was a widow when Akbar married her in 1561, her first husband having been the great Bairam Khan, the real restorer of the Moghul Empire. Humayun had promised Bairām that he would give Salima in marriage to him as soon as India was conquered. When this was accomplished in Akbar's reign, all the ladies who had been left in Kabul came to India, and, in the end of 1557 or beginning of 1558, the marriage of Bairām and Salīma was celebrated with great pomp in the city of Jalandhar in the Punjab. About three years afterwards Bairām fell by the hand of an Afghan assassin, and subsequently Salima became the wife of Akbar. The exact date of the marriage does not seem to be known, but if Salīma accompanied Bairām to Guzrat she probably did not return to Agra till the middle of 969, February 1562, when her stepson Abdur-Rahīm (afterwards the famous Khān-Khānān) was brought to Akbar from Ahmedabad. The marriage therefore may have taken place then, though Blochmann puts it into 968. Salima had no children by either of her husbands, but she seems to have attached herself especially to Prince Salim (Jahangir), and when that foolish and wicked man quarrelled with his father, Salima was deputed to Allahabad to bring him to a sense of his misconduct. She went there and was received with great respect by Jahangir who marched out two days' journey to meet her. She induced him to return with her, and she brought about a reconciliation between him and his father.

According to Jahangir's Memoirs Salīma died at the age of sixty in December 1611. This statement of her age has always been a stumbling-block to me, for if it is correct Salīma can only have been about five years of age when she was married to Bairām, and she must have been almost an infant when Humayun promised her to Bairām as a reward for the conquest of India. I was pleased, therefore, to find a note at p. 72a of B.M. M.S. on 171, Rieu I, 257, which stated that the writer had ascertained

that Salima died at the age of 76. She was born, he states, on 4 Shawwal 945, 23 February 1539, and consequently about four years before Akbar (he was born 15th October 1542, so that she was his senior by about three years and seven months), and the chronogram of her birth was khūsh-hāl (Felix, and equal in abjad to 945). Her mother Gulrukh died four months after her birth. The note is in the handwriting of the copyist Mirza Muhammad, son of Rustum, known as Mūtamid Khan and son of Qubad known as Dianat Khan, and so was written in 1148, 1735. But this copyist was not merely a scribe. He was also the author of a book of dates called the Tārikh Muhammadi, Rieu III, 895a, which was written in 1124, 1712. The statement that Salima died at the age of 76 is also given there, p. 140.

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Paul Maria La Salar Cara de Ca

Notes on the Pollination of Flowers in India. Note No. 1—The pollination of Thunbergia grandiflora. Roxb., in Calcutta.—By I. H. BURKILL.

A vigorous white-flowered plant of Thunbergia grandiflora grows over the porch of the house in Calcutta in which I live; and it is upon it that I have made my observations. It flowers from May to December profusely; but it has only once to my knowledge set any fruit-a single capsule, -although on one occasion I pollinated some half dozen flowers with the pollen of fresh flowers (both of white and mauve races) brought from Shibpur.

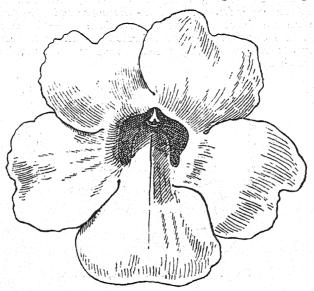


Fig. 1.—Flower of Thunbergia grandiflora, seen from in front and a little above. Nat. size.

The flowers of Thunbergia grandiflora in the hot weather and at least through August open in the night between 2-30 and 3-30 A.M. (local time); but as the cold weather comes on, they delay opening until towards or after dawn. In the hot weather they fall about 4 P.M., but in the cold weather they often do not fall until long after dark or on the next morning. They are obviously adapted for fertilisation by big bees such as Xylocopa, some of which are crepuscular in habit, and as Bingham 1 remarks (upon Xylocopa rufescens, a native of Sikkim, whence, with Assam, this white Thunbergia grandiflora comes) " on fine moonlight nights the

In Blanford's Fauna of British India, Hymenoptera, Vol. I. (London, 1897), p. 534.

loud buzzing can be heard all night long." I have never so far

seen or heard any crepuscular bee in Calcutta.

With the dawn in Calcutta, Xylocopa latipes and, generally a little after it, X. estuans, come to the flowers of the plant and visit diligently. If in August one watches at 5-30 a.m., these bees may be seen to arrive before the sun is up, and to commence work. They are still at work at 3 or 4 o'clock in the afternoon. When Xylocopa latipes visits a virgin flower, the visit lasts 8—10 seconds; if the flower is not virgin it lasts only 2—3 seconds. I find that it takes the bee 1—1½ seconds to find the honey, not that it does not know how to get at it, but that it has to thrust its proboscis in by such a crooked path, groping for the honey with the end of it. When the honey is found, and if the flower be virgin, the abdomen of the bee can be seen to beat up and down 20—25 times as it drinks. I notice that often the bee refuses to enter a flower which had been recently sucked, apparently recognising the fact by some mark or scent.

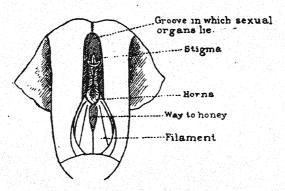


Fig. 2.—Roof of antrum, diagrammatic.

The bees, when they leave the flowers, are more or less abundantly dusted on the head and thorax with pollen; and invariably they leave some of this pollen upon the lower lobe of the stigma of the next flower which they visit. The flower itself seems to have no scent, but there is a faint scent emanating from the bracts or calyx outside, where there is a second (extra-floral) nectary visited by

ants, and an occasional fly.

On the day before the flower will be open, and about noon, the two large bracts, which have enclosed the bud up till now, part; and thereupon this extra-floral nectary begins to secrete. There is no secretion at this time from the inner floral nectary, nor will there be until after midnight when the flower is preparing to open. The bracts themselves are covered with slimy glands; and ants suck them as well as the extra-floral nectary. Secretion continues at the extra-floral nectary after the fading of the flower; it only persists on the internal nectary so long as the flower lasts.

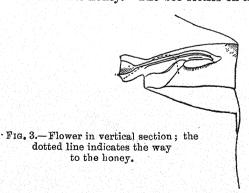
\*\*Xylocopa latipes\*\* is undoubtedly a most suitable visitor; its

large body fits the corolla tube exactly, and it can reach the honey with just that amount of difficulty which is necessary for the

shaking out of the pollen onto its back.

This is the structure of the flower. The flower is altogether 6-7 cm. across and about the same in height; the honey lies about 4 cm. from the mouth. The antrum into which the bee enters is 20-25 cm. across and 1.5-2.0 cm. high from the ridge which runs along the middle of the floor to the roof. The stigma and the four stamens lie under the roof of the antrum so as to touch the back of the visiting Xylocopa. The stigma projects just beyond the anthers. The anthers are provided at their bases with rigid horn-like hooks and all along their margins with a fringe of long hairs; the hooks catch on the insect and cause it to shake a shower of pollen down onto its back from out of the long brushes of hairs which hold it. These horns have their tips one whole centimetre behind the edge of the lower lip of the stigma; the insect, therefore, touches the stigma at an appreciable interval before, on touching these horns, it shakes down the shower of pollen onto its back. The insect does not touch the anthers themselves as these lie in a groove. The filaments broaden to their bases, and the upper pair are interlocked at the base by a tooth and groove, making a direct road to the honey impossible. The honey chamber behind their insertion is 7-8 mm. in height and transverse diameter, and is 8-9 mm. long. The ovary stands in the middle of it, and the style passes above and between the bases of the upper pair of stamens to carry the stigma, as stated, to a position above the visiting bee's back. The nectary surrounds the ovary but is most developed below.

When I first examined the flower it seemed to me just possible that the honey could be reached by a proboscis passed between and below the lower stamens, but I soon saw that that was impossible, and after a little watching I was able, by means of small windows cut in the sides of flowers, to observe how the tongue of X. latipes reaches the honey. The bee settles on the floor of the



antrum and pushes its way along it, touching first the stigma and then catching against the hooks of the anthers, and with its legs in the effort bulging out the sides of the antrum so as to bring the roof a trifle lower; it passes its tongue between the bowed upper filaments which are only 3 mm. apart, with the style between them, passes it round to one side of the style, the space being only just big enough for it (1 mm. across) and so into the honey chamber. As it enters the chamber above, and most of the honey is below, the tongue has again to pass round the style to reach it. The total length of the honey chamber from the point where the tongue enters, to the place where the honey collects, is 10—11 mm. A tongue length of 16—19 mm. is necessary to drain the flower.

Creeping insects very rarely enter the flower, and never seem

to find the honey chamber.

#### Visitors in Calcutta-

HYMENOPTERA ACULETA. Api dæ. (1) Xylocopa latipes, Fabr., sucking honey, July, August, September, October, November. (2) X. æstuans, Lepel., sucking honey, August, September. (3) Apis florea, Fabr., collecting pollen, flying into the open antrum and settling on the anthers, leaving the flower by dropping onto the floor of the antrum, August, September, October, November. (4) Apis dorsata, Fabr. once an individual persistently trying to reach honey, hanging under the stamens, November. Thysanoptera. (5) Thrips sp. November.

Visitors to the extra-floral nectaries—Several species of ants.

I have seen this plant in the Assam forests, where it fruits fairly abundantly; but I have not had any opportunities of watching it for insect visitors. Large black ants there patrol the infloresences feeding at the extra-floral nectaries, and at the floral nectaries just after the fall in the corolla. They do not interfere with the *Mylabris* beetles which devour the corollas from inside.

64. Notes on the Pollination of Flowers in India. Note No. 2—The pollination of Corchorus in Bengal and Assam.—By I. H. BURKILL.

Emile Lefrance (Ramie and jute in the United States, Washington, 1873, p. 16) says that "flies and butterflies keep away from the jute fields especially at the blossoming period. The peculiar odour of the flower and the bitter exudation of the leaves seem to be strongly repulsive to them, if not poisonous."

I find in India no support for this statement. Jute is a crop of districts much submerged during the rains, where conditions limit the insect-fauna in certain directions; but whenever there are insects on the wing, jute flowers obtain visitors from among them, though the visitors are possibly more abundant if there is

land above flood level in the neighbourhood.

My work in the years 1902, 1903, 1904 and 1906 has taken me to the jute-fields all over Bengal; and as I examined crop after crop studying the races in cultivation, it has been a constant observation that two or more races may be grown in great proximity without becoming one; yet the cultivator rarely exercises discrimination in his selection of plants to be left for seed. At first I thought that I should be able to show that in the jute districts flower-visiting insects are not present in quantity, but I cannot satisfactorily do that. Instead the result of my work is to show that jute flowers do receive a considerable amount of attention from insects well built for effecting abundant crossfertilisation. Why their influence is not distinctly apparent, I am as yet in no position to say.

I shall give my observations on Corchorus capsularis first, and thereafter those on the somewhat larger-flowered Corchorus olitorius. But first I have to express my great indebtedness to H. H. the Raja of Bardwan, and also to Babu Brajendra Kishore Roy Chowdhury of Gauripur, Mymensingh, for facilities given to me

in my work at their Experimental Farms.

## Corchorus capsularis, Linn.

In 1902, I visited the Bardwan Experimental Farm on August 28th. In 1903, I had a tent pitched beside the jute-plots, and was there on August 3rd, September 2nd, 3rd, 9th and 10th. In 1904, I visited the Farm on August 10th and September 22nd: and in 1906 I was there on September 15th. The first observations to be recorded were made during these visits.

Bardwan is outside the real jute area, and there is high sandy ground close to the experimental crops. Insects proved to be very abundant. There I first studied the mechanism of the flower; and afterwards I found that it does not vary from place

to place.

The flowers of Corchorus capsularis open about 7-30 A.M.

and close in a clumsy fashion in the evening of the same day; I mean that they half close: and after midnight they cease to be shapely. By the dawn of the next day the petals are falling off. The anthers dehisce as the flowers open. They and the stigmas lie exactly at the same level. Self-fertilisation is insured in the absence of insect visitors, as I proved by means of linen wrappings whereby insect visitors were shut out.

Honey lies, half hidden, at the base of the flower, and secre-

tion has already begun when it opens.

From about 8 a.m., throughout the day, I found the flowers to be visited at Bardwán by enormous numbers of Apis florea and by lesser numbers of other bees and butterflies. The Apis visits not without danger; for a yellow-green crab-spider was very common upon the plants and was never seen to be feeding upon any other insect; and very many individuals of Vespa cincta, Fabr., were hawking among the plants, flying quickly up and down through their tops and swooping down on some luckless Apis as it sucked, carrying it away, meanwhile apparently stinging it, and then setting on a leaf to devour it from the end of the abdomen apwards. I mention this circumstance chiefly because it illustrates the enormous numbers of individuals of the little Apis busy in the jute beds, and is quite opposed to Lefrance's statement that insects avoid the plant.

Apis florea began work upon the flowers immediately they opened, and was even seen trying to visit before they had opened. Its tongue is quite short and it lays its head among the anthers in the attempt to drain the flower. It turns to right and to left. frequently making three dips into one flower; and rarely it turns quite round. Some two hours after the opening of the jute flowers the butterflies named below began to visit and continued to do so through the heat of the day until evening. They are somewhat ill-suited visitors to the plant, their long tongues enabling them to reach the honey without touching the anthers and stigmas. The small bees are obviously the best agents. Apis florea can visit and drain the honey of 10-15 flowers per minute or 600 at least per hour, while Apis dorsata, which is a quicker worker. visits about 18 per minute. The skipper butterflies visit less than 10 per minute and often only one or two. A species of Suastus and Telchinia violæ were found to be fairly constant in visiting this Corchorus and a neighbouring yellow Composite - Tridax procumbens, Linn.

## Visitors at Burdwan, August and September:-

HYMENOPTERA ACULEATA. Apidæ. (1) Xylocopa latipes, Fabr., sucking honey in 1906 only. (2) Apis dorsata, Fabr., sucking honey, fairly plentiful. (3) A. florea, Fabr., sucking honey and collecting pollen, always in great abundance. Scoliidæ. (4) Elis sp., sucking honey, fairly abundant. (5, 6, 7 and 8) Four small Aculeate Hymenoptera. (9) Formicidæ, a black ant, at honey in 1906. Lepidoptera rhopalocera. (10) Terias

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Sp. (11) Telchinia violæ, Fabr. (12) Castalius rosimon, Fabr. (13) Suastus sp. All these Lepidoptera sucking honey. Heterocera. (14) One Microlepidopteron, sucking honey. DIPTERA. Syrphidæ. (15) Helophilus sp., sucking honey. Coleoptera. (16) Coccinella sp., sucking honey.

Until recently Orissa has been more or less outside the jute area: but jute is now taking an extension in it. From August 22nd to August 27th, 1906, I was among the jute fields of Orissa, at Cuttack, Shishua and Jájpur. There is high land, sand-hills,

etc., in the immediate neighbourhood of these places.

The flowers of Corchorus capsularis were seen to be freely visited by insects. A large bee of the genus Xylocopa (probably X. fenestrata, Bingham) was very constant near Cuttack, and also a large black wasp, and there were four butterflies visiting the flowers, viz., a Hesperid probably of the genus Parnara, a Lycaena, a white butterfly and a Danais. All were at honey. Near Shishua, a wasp of the Eumenidæ was seen at honey. At Jájpur the Lepidoptera, Parnara (?), Terias and Lyceana, were again seen on the flowers together with the Hymenoptera, Apis indica, Fabr., Apis florea, Fabr., and an Eumenid. The Hesperid Parnara (?) was a frequent visitor.

Predatory wasps of a species different to that seen at Bardwán, were hunting smaller Hymenoptera among the jute tops

both at Cuttack and Jájpur.

The chief part of the valley of the Bráhmaputra in Assam has, like Orissa until recently, been outside the jute area. In it at Goálpára on September 2nd, 1906, I saw Xylocopa æstuans, Lepel., diligently visiting the flowers of Corchorus capsularis for honey, and with it were many individuals of a little blue-ringed Anthophora (or Nomia) collecting both pollen and honey. An individual of the common butterfly Terias was also on the flowers sucking honey. At Goálpára, hills are close to the jute-fields.

I will proceed now to give the results of observations in the districts of Northern Bengal, and the contiguous districts of the new province of Eastern Bengal and Assam. My work at Pusa (District of Darbhanga), Purneah and Kissenganj (District of Purneah) and Siliguri (District of Jalpaiguri), was done in so much rain that insect-visitors could not possibly go abroad. My work at Forbesganj and Barsoi (District of Purneah), Dinajpur (District of Dinajpur), Jalpaiguri (District of Jalpaiguri), Fulchari, Bogra and Santahar (District of Bogra), at Gafargaon, and on the occasion of my first visit to Mymensingh (District of Mymensingh), was done in showery weather with intervals between the showers in which insects might have visited the flowers: but I saw none. But at Parbatipur (District of Dinajpur) on August 15th, 1906, I observed on the flowers two individuals of an Eristalis sucking honey, and also a red and black Coccinellid beetle. At Balajan on September 4th, 1906, in the south-west corner of the Goalpara District, three species of butterflies were seen to visit the flowers for honey,—a Terias, a Danais and a white butterfly. And at Jagganathganj (District of Mymensingh), on September 4th, 1904, I saw on the flowers Apis dorsata, an Apid not identified, and a Syrphid fly of the genus Helophilus at honey, while pollen was being devoured by many individuals of a red Coccinellid beetle, which was present in considerable numbers. On the occasion of my second visit, September 6th, 1906, to Mymensingh, between that place and Gauripur, I saw a Danais and a white butterfly go to the flowers.

The districts of Northern Bengal are in no way so exposed to regular floods and submersion, as the places that I come to next -places on the large rivers with no high land near, where the land for the homestead has often been artificially raised and all the fields go under water annually. They are Serájganj (District of Pabna), Goalundo, Pachuria, Faridpur and Madaripur (District of Faridpur), Náráyanganj and Narsingdi (District of Dacca), Chándpur and Hájiganj (District of Tippera). At Hájiganj insects were very abundant, but not so at the other places, which I will take first and together. The insect most generally seen was the tree-nesting Apis dorsata: it was observed on the flowers in considerable numbers at Serájganj on August 12th, 1904, and again diligently visiting at Madaripur on September 19th, 1904, and at Goalundo on August 30th, 1904. Another insect was a black Apid, seen at Serájganj. The fly *Helophilus*, whose larva is aquatic, we at present believe, was seen at honey at Goalundo on August 30th, 1904. A red Coccinellid was seen eating pollen at Goalundo on the same date, at Pachuria, on August 30th, 1904, and at Chandpur on September 9th, 1906. A Terias butterfly was seen at Narayanganj on September 1st, 1904.

At Rampur Boalia, in the Rajshahi District, Mr. R. S. Finlow, on August 28th, 1906, observed butterflies on the flowers.

The following is a statement of the insects seen on the flowers at Hájiganj, on September 10th, 1906, at a time when the jute fields were under two feet of clear brown jheel water, and there was nothing above the flood except the railway embankment, a raised road and the spaces on which the houses of the village stand, and these last had largely been under water. The day was fine until the evening. Three species of Xylocopa were very busy at honey on the flowers,—X. latipes, Fabr., X. estuans, Lepel., and another which seems to be X. fenestrata, Bingham. X. latipes visited at the rate of thirty flowers a minute and X. estuans at the rate of thirty-five. Apis dorsata was abundant, sucking honey, and Apis florea was represented by a small number of individuals. A black Apid of the size of Apis dorsata was present also. Of butterflies three species were flying from flower to flower in the jute fields, a Terias, a Danais, and a white butterfly. A beetle of the Coccinellidæ was eating pollen.

Among the jute tops, Vespa cincta was busy hunting small Apids; and innumerable dragon flies were present here as elsewhere, giving an additional contradiction to Lefrance's supposition.

## All Visitors of Corchorus capsularis.

Hymenoptera—  Xylocopa latipes x X. æstuans x X. fenestrata x Apis dorsata x x A. indica x A. florea x Anthophora, sp x													_					-
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COLEOPTERA—				L			-				Ļ	1	L		1	_		
6. 一点:"你,你们不知,你说,你不知识的,这个时间的,这样,一直,她的一样的手,看看你就说,我,还是这样的话,这样,我们就能够看着。"	<b>4</b>																1	
Coccinellid   x   x   x   x   x   x	ıllid		×	×	×	×			×		×		1	×	1		1	

### Corchorus olitorius, Linn.

The floral mechanism of this is exactly like that of *Corchorus capsularis*. The flowers also open at the same time and the anthers discharge pollen in the same manner. If insect visitors be excluded, self-pollination gives rise to a supply of good seed. At midnight the flowers are no longer shapely, and by the next morning the petals are falling. The flowers open by time not by weather, and will expand on the wettest day.

#### Visitors at Burdwan-

HYMENOPTERA ACULEATA. Apidæ. (1) Apis florea, Fabr., sometimes trying to visit before the flowers open. (2) A black Apid. (3) A black and tawny Apid. All sucking honey.

## Visitors at Chinsurah on September 16th, 1906-

HYMENOPTERA ACULEATA. Apidæ. (1) Xylocopa æstuans, Lepel., two individuals diligently sucking honey. (2) An Apid of the size of Apis dorsata, sucking honey. Lepidoptera rhopalocera. (3) Papilio sp. (4) A white butterfly frequently at honey. Colioptera. Carabidæ. A small species, frequently feeding on pollen.

It is only in the Hooghly District and within the borders of adjoining districts that this jute is a commoner crop than C. copsularis, and I have not given to it the same attention that C. capsularis has had. But insects do not avoid the crops: and dragon flies and Vespa cincta find plenty of prey in them as in plots of C orchorus capsularis.

. . . . . .

Same Large

 Notes on the Pollination of Flowers in India. Note No. 3—The Mechanism of six flowers of the North-West Himalaya.—By I. H. Burkill.

The following are wayside notes made in marching through the hills and valleys north and west of Simla, in May—the hottest and dryest month of the year, when the shade temperature at the lower levels passed daily far above blood heat.

#### ADHATODA VASICA, Nees.

The conspicuous flowers of Adhatoda Vasica are in spikes, but they open only a few at a time. They are large, white and honied. The plant grows as a small bush in waste lands and on the borders of fields very plentifully below 4,000 ft., and flowers from December to June.

The tube of the corolla is 12 mm. long and curved a little: near its base the lumen is constricted by four indentations from outside, a pair above and a pair below (rather diagrammatically represented in fig. 12); the dorsal pair are a little above the ventral pair as indicated in fig. 11. At this point there is a weal of hairs obstructing a free passage down to the honey: the sides of the tube are strengthened by the adherent filaments of the two stamens. There is a large humped platform for insects to alight on.

The flowers open in the evening by the falling away of the lower from the upper lip—an act which leaves the upper lip hooded over the green anthers. These green anthers are in contact at the opening of the flower, and the stigma just peeps over the top of them. A little after the opening of the flower the tip of the hood turns up a very little, making room for the stigma to lift itself from contact with the anther-lobes. The anthers dehisce downward, on the lower side exposing their pollen for the backs of visiting bees to rub it off. It is 4 mm. from the anthers to the top of the hump of the platform.

As the flower ages the stamens diverge and the empty anthers are no longer covered by the hood; they become 10 mm. apart or more. While this is happening, the upper part of the style curves so as to bring the stigma exactly where the anthers

were. The flower is then in the female stage.

Two species of Bombus were seen on the flowers—B. hæmorrhoidalis, Sm., and another species, here called Bombus B., at 1,600 ft., and Xylocopa æstuans, Lepel., at 2,000 ft., all sucking honey. Flowers that are not visited do not set any seed, and they are 90 to more than 99 per cent. of those produced in the rather dreary parts of the Sutlej valley, where, in May, these observations were made.

## DICLIPTERA BUPLEUROIDES, Nees.

The flowers of Dicliptera bupleuroides are numerous enough to make the plant quite conspicuous on the road-sides and

dry half bush-clad slopes that it inhabits. It is an excessively common plant in the Simla Hills from the plains to 7,000 ft.: it is generally much stunted. The flowers are purple (magenta),

very rarely white, and they are honied.

The tube of the corolla is 7—9 mm. long and twisted through half a circle, so that the morphologically upper lip with the stigma and anthers is below, and the morphologically lower lip is above. The upper lip having no function as a hood has become flat and is converted into a fairly broad landing stage: while the lower (ultimately upper) lip serves as a standard, having dark dots near its base. The twisting of the tube takes place in the half-grown flower and always towards the same side. Except that the twisting practically obliterates the lumen of the very thin-walled tube, there is no obstruction in the way to the honey. The outside of the corolla is hairy and below the twist is more or less protected against biting and robbing insects by the bracts (see fig. 6). The rectangular mouth of the tube is seen in fig. 8.

The flowers open at dawn and fall on the same day between

4 P.M. and midnight.

Insects visiting the flowers settle on the stamens and style, touching the anthers and stigma, which are 2 mm. apart; with the underside of their bodies. An Anthophora was seen on the flowers at Suket, 4,000 ft., and Apis indica was seen on the flowers in Simla at 7,000 ft., both sucking honey, the latter diligently. A wasp was found at Suket to bite through the corolla tube for the honey.

## MORINA PERSICA, Linn.

The flowers are, in whorls, on a very conspicuous spike, white, honied, and sweetly but not strongly scented. The plant grows in the open on dry hill-sides at altitudes of 6,000 to 9,000 ft., flowering in May when the grass is short, and it has not many competitors. The following observations were made on May 21st, 22nd, and 23rd, 1906, on the hills both north and south of the

valley of the Sutlej above Suni, not far from Simla.

The tube of the flower is 40-45 mm. long and contains honey in fair quantity: no obstruction of hairs or difficulty is offered in the lumen to the passage of an insect's proboscis, if only long enough. But a platform to settle on is not provided. The outside of the tube is somewhat glandular hairy; and a hard calyx protects its lowest 5-6 mm. against the biters of corollas. Nevertheless, though rarely, Bombus hæmorrhoidalis bites the corolla, and steals the honey: the holes which it makes I have seen utilised afterwards by a small Apid.

The flower opens just before sun-down, and is then pure white: the stamens have already dehisced and the stigma is sticky with sweet juice. In the opening of the flower the lower three petals begin to separate from the upper two, and the lowest petal of all falls: a quarter of an hour later the lateral members of the lower trio turn outwards and downwards: then the upper

lobes spread exposing the stigma and two contiguous stamens: after about forty-five minutes from the appearance of the first crack in the bud the flower is fully expanded as drawn in fig. 1.

Fertilisation is affected by Sphingidae, which leave abundant signs of their visits in plumes adhering to the stigma. After a fine night, I found that almost every flower had been visited by them. Once at sundown I saw Bombus hæmorrhoidalis in vain trying to reach the honey from the throat of the flower. I saw no butterflies going to the flowers by day, though I watched for them

On the second day, some fourteen hours after they open, the flowers become flushed with rose-purple on the corolla-lobes: and before the sun sets and the next night's flowers open, they wither.

Kerner, in his Pflanzenleben, ii., p. 349, translated as the Natural History of Plants, makes several statements regarding Morina persica in Europe that point to differences between the Indian plant and the European plant. The time of opening and withering is the same, but he figures the corolla lobes as projecting forward, and says that anthers do not dehisce in the bud but half an hour after the flower opens. Afterwards, he says, the stigma curls round onto the anthers.

## SALVIA LANATA, Roxb.

The flowers are, in whorls, on a conspicuous spike, deep lilac and honied. The plant grows in the open on dry hill-sides at altitudes of 5,000 to 8,000 ft., and the spikes stand out of the short burnt-up turf of May. The following observations were made over a wide stretch of country both west and north of Simla.

The tube is 11—12 mm. long, widening much vertically: it contains honey in fair quantity, the way to which is blocked by the sterile half anthers, as in Salvia pratensis; a tooth on the sterile end is just seen at the entrance to the throat in a side view of the flower (see fig. 4). There is no obstruction within the tube beyond the sterile half anthers. The outside of the corolla is somewhat glandular-hairy, and the gamosepalous calyx is very glandular and for a length of 7 mm. protects the corolla-tube. Nevertheless, the corolla-tube is frequently bitten through, generally on the right-hand side, most probably by Bombus hæmor-rhoidalis.

The flower opens in the early morning. The stigma projects from the hood as drawn: and the anthers are protected by the hood as indicated in fig. 4. A single stamen is drawn in fig. 5. There is a horizontal platform made by the lower lip, for bees to alight on: it is 7 mm. long. A bumble bee, alighting on the platform, touches with its back the projecting stigma, and then pushing with its head against the sterile anther lobes, brings the fertile anther-lobes down upon its back, just as in other Salvias.

A Bombus which I have not yet determined and may call Bombus A, was seen at 7,000 ft. on the flowers, going diligently from one to another.

## SCUTELLARIA LINEARIS, Benth.

The flowers are in spikes and are conspicuous, but are not raised above the short grass of the dry slopes where the plant flowers in April and May. They are rose-pink with a yellow patch on the landing-stage of the lower lip, and are abundantly honied. They open in the early morning.

Observations were made on the flowers north and west of

Simla, on both sides of the Sutlej valley.

The tube is 11-15 mm. long, rather narrow in the lower half, and slightly curved at the very base: in the upper half it broadens into the two lips. The lips are pressed very close together so that the tube is closed. There is no other obstruction to the tongues of insects, beyond the compression of the lips. The flower is intended for the visits of Bombi, which are strong enough to open the lips and adept enough to know how to get the honey. With their feet on the well-marked landing stage they have to raise with their heads the upper lip, a process which is contrived by pressing against the curious palatal plates (marked p. in fig. 10): on raising the hood the stigmas and anthers become exposed and the hood again returns over them when the lifting pressure is removed. These palatal plates are invaginations of the hood behind the lobe which is seen at the base of the upper lip in fig. 9.

The outside of the corolla is covered by fine hairs: the calyx hardly protects the tube at all at the base. Bombus hæmorrhoidalis bites every flower that it visits. It settles on the lower lip as if to suck honey in the proper way, then rapidly turns head downwards on the right-hand side of the flower and bites the tube just above the calyx: it busies itself with this work from dawn to dusk; and almost every flower examined had been robbed thus.

## TEUCRIUM ROYLEANUM, Benth.

The flowers are in whorls, on a moderately conspicuous spike, white with a very faint green tinge, and are honied. The plant grows in hedges and under trees, flowering in May. The following observations were made at Bilaspur on the Sutlej, 1,600 ft. above sea-level on May 12th and 13th, and at Suket, further north, on May 16th, 1906.

The tube of the flower is 8—9 mm. long and slightly curved: the bases of the filaments divide its lumen as in fig. 3, into a part which contains the style and a part which contains the honey. The lower lip forms a horizontal landing stage—a sort of spoon wherein insects may alight: the handle of the spoon has two pairs of teeth on it for compelling the insect-visitors to approach

the mouth of the tube under the anthers and stigmas, which stand exposed over the landing stage. The distal teeth diverge, but are not horizontal as is the case in some European species of the genus: the nearer teeth are vertical and parallel as in *Teucrium Chamædrys*. The outside of the corolla is not hairy: the gamo-sepalous calyx protects the lower half of it from the biters of corollas.

The flower is proterandrous, and when it has just opened the stigma is behind the stamens: it moves forward during flowering

as indicated in fig. 2.

The flower is visited by an Anthophora: and this bee settles on the spoon with its head thrust between the divergent teeth and up to the parallel processes. A glance at fig. 2 will show how, in so visiting the flower, it touches the anthers when the flower is young and the stigmas first when it is old. The longer filaments of the two pairs of stamens elongate a very little during flowering and just carry their anthers to a point beyond that indicated in the figure. The stalk of the flower is less rigid than the stalk of the alighting platform, and bends a little under the weight of a suitable insect-visitor.

#### EXPLANATION OF THE PLATE.

All the flowers are represented exactly twice their natural size, and at the angles which they take in life.

Fig. 1. Flower of Morina persica.

Fig. 2. Flower of Teucrium royleanum; the early and the

late positions of the style are dotted in.

Fig. 3. Section through the tube of Teucrium royleanum near the base to show the way in which the honied part of the tube is made small and the distribution of hairs in it.

Fig. 4. Flower of Salvia lanata, with the position of the

stamens dotted in: s. is the tooth on the sterile anther-lobe.

Fig. 5. A stamen of Salvia lanata in the position that a bee makes it to take.

Fig. 6. Flower of Dicliptera bupleuroides with its bracts.

Fig. 7. Corolla and style of Dicliptera bupleuroides to shew the twist of the tube.

Fig. 8. Corolla of Dicliptera bupleuroides seen from the

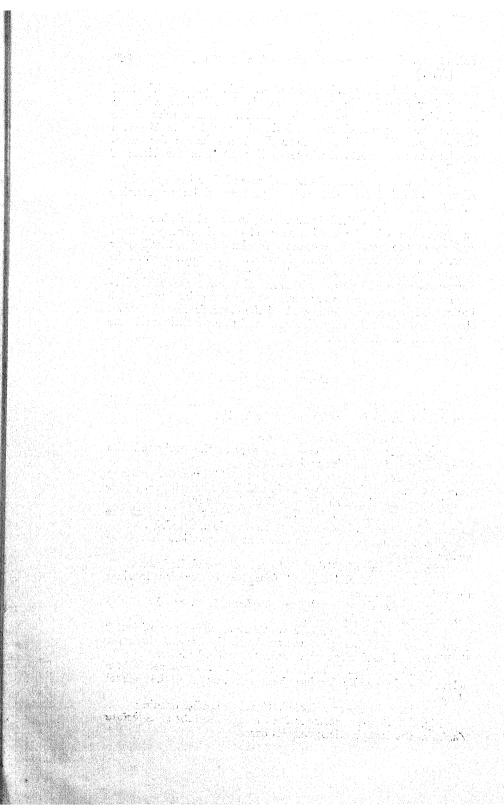
front and from slightly below.

Fig. 9. Flower of Scutellaria linearis, with the position of the stamens dotted in: the narrow lobe at the base of the upper lip hides the invaginations that make the palatal plates.

Fig. 10. Tube and hood of Scutellaria linearis seen from below, the lower lip having been cut away: p. the palatal

plates.

Fig. 11. Flower of Adhatoda Vasica just after opening. Fig. 12. Diagrammatic section through the tube of Adhatoda Vasica at the invaginations near its base.



66. Note on the Common Kestril (Tinnunculus alaudarius).—By LIEUT.-COLONEL D. C. PHILLOTT, Secretary, Board of Examiners.

In the Kapaurthala State the Common Kestril is, by bird-catchers and falconers, called Regi, a name elsewhere in the Panjab given to the English Merlin. Amongst Panjab falconers generally, it is known by the name of  $Larz\bar{a}nak$  or "the Little Quiverer," and amongst Pathans by  $B\bar{a}d$ -Furukh, probably a corruption of  $B\bar{a}d$  Khurak, a term nearly equivalent to the English "Windhover." In the Chhach district of the Panjab (Lawrence-

pore, Hazru, etc.) it is called Shikl.

According to Blanford it builds in the Himalayas above 7,000 feet. On 12th June 1891, however, I took two young birds from a nest in the chimney of the church at Abbottabad, Panjab, the height of Abbottabad being about 4,000 feet. The young had no down left on the feathers, though the tail-quills were only about three inches long. I have also observed the Kestril during the breeding season in the Sulaiman Range, in the Rakhni Plain, Baluchistan, height about 3,500 feet, and at Fort Munro just above Rakhni, height about 6,000.

The Kestril is easily caught in a do-gaza with a mole-cricket

(Panjabi  $gh\bar{u},\bar{a}n$ ) as a bait.

In the Chhach-Hazara District it is sometimes used as a  $b\bar{a}rak$  1 for the English Merlin, two or three inches of the end of its

tail being previously cut off.

According to the Bāz-Nāma-yi Nāṣirī² it is, round Bushire and in other parts of the Dashtistān-i Fārs, used in the following manner as a decoy for snaring saker falcons. Being caught and trained to "wait on," a string about twenty inches long is fastened to its legs, and at the end of the string is a small bunch of feathers. Thus trained and prepared, it is cast in the air to "wait on." From a distance it appears as though it were circling over a small bird in difficulties, and various birds of prey are attracted from far and near by the sight. As soon as a bird of prey draws near it, the Kestril, apparently of its own accord, settles on the ground, and the trapper produces a pigeon. "The moment," says the writer, "that the hawk seizes the pigeon, it falls into the snare"; but what particular kind of snare is adopted he does not inform us. Persian and Arab gentlemen, whom I have visited at Baghdad, Basra, Muhammarah, and Shiraz, have confirmed this description.

The same author says that he has himself seen the Arabs of 'Unayzahand Shammar using the 'eyess' kestril to train greyhound-pups that are intended for gazelle-hawking. The nestling is

4 A young hawk or falcon taken from the nest (eyrie).

 $<sup>1\ \</sup>emph{B\bar{a}rak},$  a hawk used as a decoy: it has horse-hair nooses attached to its feet.

<sup>2</sup> A modern Persian work on falconry. 3 'Wait on'; to circle high over the falconer's head waiting for the quarry to be flushed.

tamed and called to the fist till it is 'hard-penned.' It is then entered to jerboa-rats let loose at the end of a string. A rat with a broken leg is next released in front of a greyhound pup of "two months old" and the Kestril is cast off: the rat is taken after a few stoops. Next a rat with a broken leg is released before two pups of "three or four months old," and when the pups start in pursuit, the Kestril is cast off. The pups make a dash and the Kestril makes a stoop, and so on alternately till the rat is taken. After a few maimed rats have been taken by the pups and the hawk, a sound rat is released in front of the pups, but a thin strip of wood, three or four inches in length, is passed transversely through the rat's ears to prevent its entering a hole. Behind the pups, the Kestril is cast off. "It is obvious," says the author, "that two-month old pups cannot in the open country overtake or seize a sound 'two-legged rat.' After about thirty or forty stoops the rat is taken. The sport is just like gazelle-hawking with a charkh and greyhounds."

In an old Persian MS. on Falconry, written in India, it is contemptuously stated that, "The Kestril is of no use except that its feathers may be used to imp the broken feathers of Merlins." No wonder that, in the olden days of falconry, it was assigned

to a "knave."

- 67. ANTHROPOLOGICAL SUPPLEMENT.
- 6. Two Persian equivalents for Peter Piper.

The following are two Persian Equivalents for "Peter Piper":—

Imshab si shab ast hi dar Shabistān-i Sayyakh har si si-shab sakht shab-i sardī 'st Shaikh Shamsu-'d-Dīn.

Shabistān is the covered and enclosed portion of the mosque:  $r\bar{u}zist\bar{a}n$  is that portion open on all sides, the roof being supported by pillars.

Har si si-shab means the three consecutive nights, 'this

night, last night, and the night previous to last night.

Z' buz-duzd-ī buz-ī duzdīd duzd-ī. 'Ajab duzd-ī z' buz-duz buz bi-duzdīd.

"From a goat thief, a thief thieved a goat;
A rare thief to thieve a goat from a goat-thief."

The following well-known verse gives the days of the month considered unlucky by the Persians:—

Haft rūz-ī nahis bāshad har māh-i Z' ān hazar kun tā na-yābī hīch ranj. Si u panj u sīzdah bā shānzdah Bīst u yak bā bīst u chār u bīst u panj.

"Seven days are unlucky in each month.
Avoid these if you wish to avoid ill;
The third, the fifth, the thirteenth, and
the sixteenth,
The twenty-first, and the twenty-fourth
and the twenty-fifth."

D. C. PHILLOTT, Lieut. Colonel.

<sup>1</sup> Duz vulgar for duzd.

## 7. Note on the Jargon of Indian Horse Dealers.

Besides the mercantile sign language detailed in Journal No. 7, Vol. II, 1906, some trades have a jargon of their own that amounts to a secret language. A horse-dealer, for instance, instructing an underling to go and examine a horse in a fair, with a view to purchase, might still say  $j\bar{a}$ , o theko, the verb theknō being probably a corruption of dekkhnō; but this, as well as most of the horse-dealers jargon, belongs to a past generation. Old Panjab dealers, still living, remember the time when the following phrases

were current amongst them :-

Horse, gorpā; mare, gorpī; fore-legs, hāth or dastāure; it has good fore-legs, dastāure māle; it has bad fore-legs, dastāure kason; bad, bashazī; eye, kilkiyān; tooth, chhubāhī; bog-spavin, lāsa; to examine, hāzanā. In discussing prices, too, a secret code used to be observed. The following list of numbers was collected with difficulty, by the writer, at various horse-fairs in the Panjab, various horse-dealers contributing odd numbers that had stuck in their memory. The numbers are given exactly as collected, discrepancies included. Writing on the subject an ancient Dallāl says, "These numbers are Pushtu, or if not Pushtu, then they must be some other language." As they are not Pushtu, we must conclude they are 'someother language':—

1/2	Nim.	20	$Sar{u}tar{\imath}.$
ĺ	Akel or Aspīna.1	25	Kafa 2 māle 7 sūtī.
$1\frac{1}{2}$	Akel nīm.	30	Gerī daigān.8
$ar{2}$	$Yar{a}z$ .	35	Kafa kaso 9 yā sūtī.
3	$Gerar{\imath}.$	40	Yā suti,ān.
4	Gāpān.	45	Kafa māle yā sutī,ān.
5	Kafi.2	50	Kafa daigān.
6	Rekhī.	60	Geri sūtī,ān.
7	Rekhī-bas.3	70	
8	Yāz bash.	80	Gāpān sūtī,ān.
9	Sar-ī bash.	90	Sar-ī aspīna kaso lāng.
10	Sur-ī aspīna.	95	Kafi 2 kaso lāng.
11	Sār-i māte.4	100	Lāng.
12	Sar-i yāz.	125	Māsha māle lāng.
13	Sar-ī geri.	150	Akel nīm lang.
14	Sar-ī yāpān.	175	Māsha kaso yōz lāng.
15	Sar-ī nīm.5	200	Yāz lang.
16		225	Yāz lang māsha male.
17 (	96	250	Yāz nīm lāny.
18 (	그 하는 것이 뭐 하나요 얼마나	275	Māshu kaso gerī lāng.
19)		300	Gerī lāng.

I It lingers in my mind that I have heard aspina used for a rupee.

<sup>In 5 and 95 kaft; elsewhere kafa.
Bas should apparently be bash.</sup> 

<sup>4</sup> Why not Sar-i akel? 5 Why not Sar-i kafi? 6 I was unable to obtain these numbers but logically 16, 17 and 18 should be sar-i rekhi, sar-i rekhi bas, sar-i yāz bash.

<sup>7</sup> Māle="on, upon." 8 Daigān=dahā'i. 9 Kaso=kam.

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325 Māsha māle geri lāng. 600 Rekhī lāng. 700 Rekhi bash lang. 350 Gerī nīm lāng. 375 Māsha kaso gāpān lāng. 800 Yāz bash lāng. 900 Sar-ī bash lāng. 400. Gāpan lāng.

1000 Pare māle lāng.

D. C. PHILLOTT, Lieut. Colonel.

A Muslim charm (Arabic) suspended over the outer door of a dwelling to ward off Plugue and other sicknesses.1

"In the name of God the Compassionate, the Merciful, (the Wise and Thou art possessed O God! Thou art \ the Clement,2 (the All-knowing) of forbearance. There is in us no power to fathom Thy  $\left\{ \begin{array}{l} Wisdom \\ Clemency^{8} \\ Knowledge \end{array} \right\}$  O God!

<sup>1</sup> This has been copied from one suspended over a house-door in Calcutta.

<sup>2</sup> Any of these epithets may be used.

<sup>3</sup> Alternative readings.

No.

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O God! Security, security, security!-from Plague, Epidemics, Sudden Death, Misfortune and the Rejoicings of Enemies: from these punishments, Good Lord, deliver us. for we are

of the { Believers. } This we ask through Muhammad and

his Holy Family. Amen, Lord of the Universe!"

Should a childless man read this charm twenty-one times on the 15th of Sha'ban, after the maghrib prayer, setting aside one pice after each reading and then give the pice to the poor, he will be blessed with offspring. with the wastered to the

D. C. PHILLOTT, Lieut. Colonel.

## 9. Note on the Humā or Lammergeyer.

The Humā or Humāy, so often translated 'Dinenix,' is not, as is commonly supposed, a fabulous creature is merely the Lammergeyer or Ossifrage. Sa'di 1 says of it:---

همای بر همه مرغان از آن شرف دارد که استخوان خورد و جانوری نیا زارد

"The Huma is, for this, of birds the king: It feeds on bones and hurts no living thing."2

Jehangir, in his memoirs, writes:-

"Accordingly, on the 19th of the sacred month of Muharram 1035 A. H.,3 We moved our Royal Standards towards Lahore. Previous to this it had been frequently represented to Us that in the Pir Panjal there existed the bird known as the Humā. People of that district stated that its food was fragments of bone, and that the bird was ever to be seen sailing in the air, seldom seated on the ground. Since our Royal Mind was greatly bent on investigating this matter, it was directed that, should any of Our Royal Qarāvuls 4 shoot one of these birds and bring it to Our Presence, he would receive a reward of a thousand rupees. It so happened that Jamal Khan, a Qarāvul, shot one and brought it to Our August Presence. As it was merely wounded in the leg, it reached Us alive.5 We directed that its crop should be examined. The crop was accordingly opened and was found to contain nothing but fragments of bone. The hillmen informed

and not as in the text "was viewed, seen."

<sup>1</sup> Gulistan, Chap. I., St. 15. 2 Eastwick's translation. 4 Qarāvul "a gnard, a sentry," etc: in India, apparently the match-lock men that acted as guards and shikaris, and accompanied the royal ele-5 Bi-nazar dar amad: in modern Persian this would mean "appeared,"

Us that its food consists entirely  $^1$  of bits of bone, and that it is ever seen sailing in the air questing, with its attention turned towards the earth; and that whenever it spies a bone, it seizes it in its beak, and rising aloft casts it on a rock and shatters it, and then descends and eats the shattered fragments. It therefore appears to us most probable that this is the  $Hum\bar{a}$  so well known

by name."2

The Lammergeyer, however, does not confine itself to bone. I have seen one carry off a dead chicken in its beak. Once, too, in Baluchistan I saw one stoop at a covey of 'chukor.' A Pathan orderly galloped to the spot and brought back a 'chukor,' dead but still warm. Whether the Lammergeyer had killed it, or whether it had robbed it from some other bird of prey is possibly doubtful; but my party of seven or eight keen-sighted hillmen star d that the Lammergever had killed it, and this too was my own impression. An Englishman, a sportsman and a keen observer, told me that he had once seen a Lammergeyer chase a 'chukor' down a ravine, but did not witness the end of the chase. (As the 'chukor' was olitary bird, it was perhaps a sickly one.) On another occasio, in the little hill-station of Shaikh Budin, near Dera Ismail Khan, I saw a Lammergeyer stoop repeatedly at a markhor kid on a narrow precipitous path on the cliff below me. At each stoop the mother brought her horns down to the 'charge' and effectually kept the assailant at bay. Blanford writes: "The stories, chiefly Alpine, of its carrying off lambs (whence its name of "Lammergeyer" or Lamb vulture) and even children, and pushing goats and other animals over precipices, are now generally discredited. It is somewhat doubtful whether this great bird ever attacks living prey, \* \* \* ." Whether the Lammergeyer was really attempting to brush the kid off the cliff-side, or whether it was merely animated by that spirit of mischief that enters into birds as well as beasts, I cannot say.

The old Persian fable, that the man on whose head the shadow of a  $Hum\bar{\alpha}^3$  falls, will eventually become a king, is well known; not so the modern Persian superstition, that he who shoots one of these auspicious birds, knowing it to be a  $hum\bar{\alpha}$ , will meet his

death within forty days.

D. C. PHILLOTT, Lieut. Colonel.

<sup>1</sup> Madar "centre," etc.: properly "its chief food," but the word is aften incorrectly used to signify, as in the text, "entirely."

<sup>2 &</sup>quot;Tüzuk-i Jahângīrī"; Jashn-i Bistumīn-i Nauroz, page ra edition by Syud Ahmud, Ally Gurh, 1864 A.D.

<sup>3</sup> From Humā comes the adjective and proper name Humāyān, "Fortunate."

کس نیاید بزیر سایهٔ بوم \* ورهما از جهان شود معدوم

<sup>&</sup>quot;What though the phœnix from the world take flight, 'Neath the owl's shadow none will ere alight."

## 10. Notes on certain Shi'ah Tilisms.

It is believed by the Shī'ahs that the following seven tilisms have been handed down direct from the Twelve Imāms and other great saints. These are generally inscribed on blank pages at the beginning of the Qur'ān or other religious books. There is a special tilism for each day of the week, and it should be simply looked at, not perused, after the morning prayer.

#### Saturday.

"He who regards this diagram on Saturday, will, till the following Saturday, under God's protection, be preserved from all calamities. He will further receive respect from kings and dignitaries of the State; all who meet him will love him; and he will also be protected from sudden death."

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#### · Sunday.

"He who regards this diagram on Sunday will escape hellfire; all things will be easy to him; he will be loved and respected by all people, high and low; and all his enemies will be vanquished."

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## Monday.

"He who regards this diagram on Monday will that day be, under God's protection, safe from all harms; and he will be saved from his enemies, from those that seek to injure him, and from the temptations of Satan; he will be loved by all and will be prosperous in all his undertakings."

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#### Tuesday.

"He who regards this diagram on Tuesday, will be under the protection of the Great Protector, and will be saved by God on High from the commission of sins, great or small, and will obtain his desires in this world and in the next."

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## Wednesday.

"He who regards this diagram on Wednesday will be saved from all the ills and dangers of that day; he will be loved and respected by all, and the Lord Most High will accomplish his lawful desires."

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## Thursday.

"He who regards this diagram on Thursday will be loved and regarded by all; he will obtain wealth, and, under the protection of God on High, will escape all dangers and be successful in this world and blessed in the next."

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### Friday.

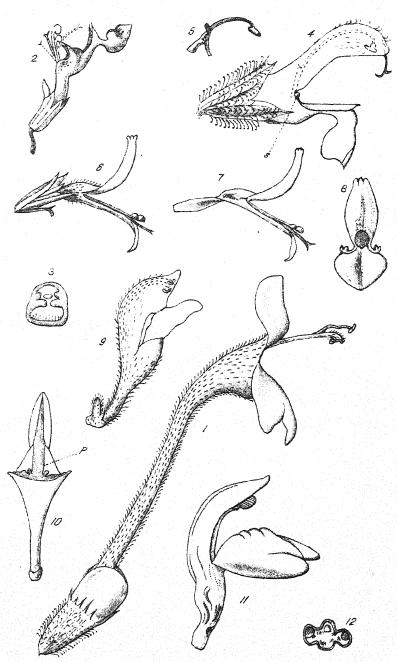
"He who will regard this diagram on Friday will find, on that day, his enemies turned into friends; he will obtain his desires to the full and will be loved and respected; and he will be safe from all ills."

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D. C. PHILLOTT, Lient. Colonel; and MUHAMMAD KAZIM SHĪRĀZĪ.

I An epithet frequently used in Tilisms is  $\vec{U}$  which seems to have no correct meaning.

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SIMLA HILLS FLOWERS, ALL ×2